# LAKE ANDES NATIONAL WILDLIFE REFUGE

## LAKE ANDES, SOUTH DAKOTA

## ANNUAL NARRATIVE REPORT

## CALENDAR YEAR 1987

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

LAKE ANDES NATIONAL WILDLIFE REFUGE

LAKE ANDES, SOUTH DAKOTA

ANNUAL NARRATIVE REPORT

Calendar Year 1987

Bill Wilson 4/4/88

Refuge Manager Date

Refuge Supervisor Review Date

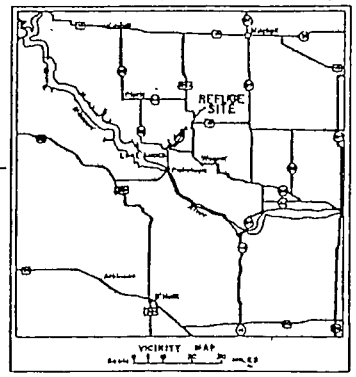
Regional Office Approval Date

# LAKE ANDES NATIONAL WILDLIFE REFUGE

CHARLES MIX COUNTY, SOUTH DAKOTA

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE




LEGEND

- STATE PUBLIC USE AREA
- FEE TITLE LAND

R. 65 W. R. 64 W.

98° 32' 98° 30' 98° 26' 98° 24'

43° 14'

43° 12'

ANDES CREEK UNIT

NORTH UNIT

CENTER UNIT

SOUTH UNIT

OWENS BAY UNIT

REFUGE HEADQUARTERS

JOHNSON BAY

LAKE ANDES

LAKE

T. 97 N.

T. 96 N.

COMPILED IN THE BRANCH OF ENGINEERING
FROM SURVEYS BY THE B.S.F. & W. & U.S.G.S.

MINNEAPOLIS, MINNESOTA

DEC., 1966

FIFTH PRINCIPAL MERIDIAN

Scale

TOWNSHIP DIAGRAM

MEAN DECLINATION 1965

# INTRODUCTION

Lake Andes, a 4,700 acre meandered lake, whose water level depends entirely upon annual runoff, lies in the south central portion of Charles Mix County, South Dakota. The lake, historically used as a campsite by Sioux hunting parties pursuing the migrant buffalo herds and waterfowl flock, was actually named after a French trader whose nickname was Andy. "Andy's Lake" was given its present title following the establishment, in 1900, of a town and post office.

The Lake Andes National Wildlife Refuge was established in 1936 by a Presidential Executive Order which authorized the purchase of 365 acres of land at Owens Bay. Subsequent land purchases have been made on a continuing basis, forming the Owens Bay Unit (832 ac.) and the Andes Creek Unit (410 ac.).

In 1939, the largest single easement ever taken from the state of South Dakota conveyed to the United States Fish and Wildlife Service the right to flood the meandered lakebed and maintain a closed Refuge for migratory birds and other wildlife.

Two dikes separate Lake Andes into three management units, however, the lack of a permanent water supply allows very little water level manipulation. The Owens Bay marsh (240 ac.), fed by natural runoff and the waters from a free-flowing artesian well, is managed using a system of periodic water level draw downs to produce optimum waterfowl brood rearing conditions, plus the production of natural waterfowl food.

A January 1973 outbreak of Duck Virus Enteritis killed 40,000 ducks and geese using the open water of Owens Bay. This unfortunate die-off prompted drastic changes in the Refuge's management, including the elimination of wintering waterfowl (using short periods of well shutdown and pyrotechnics) during the winter months and the elimination of food crops previously grown for the wintering flocks of ducks and geese. Nearly 300 acres of cropland were reseeded to native grass nesting cover and the area is now managed primarily for the production of waterfowl and various species of waterbirds. A multitude of birds and animals, indigenous to the prairie ecosystem, also utilize the Refuge.

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## A. HIGHLIGHTS

The winter of 1986-87 was one of the mildest on record while heavy rains in March raised Lake Andes over the dikes for the second year in a row (Section B.).

Waterfowl production was estimated to be 19% above 1986 (Section G.3).

Two hundred seventy five thousand pounds of bullheads were removed from Lake Andes by commercial netting (Section G.11).

Fishermen had excellent fall fishing for largemouth bass and yellow perch (Section H.9).

The Owens Bay shop was remodeled to make better use of the floor space and modernize the maintenance facilities (Section I.1).

## B. CLIMATIC CONDITIONS

The winter of 1986-87 was like no other in the recent memory of local residents. Both man and wildlife enjoyed one of the warmest South Dakota winters on record. No snowfall was recorded during the month of January and only 2.5 inches fell during the February-April period. The lack of snow cover made temperatures in the fifties common. Not the typical South Dakota winter! Average snowfall for the January-April period for Pickstown is nearly 16 inches.

Large areas of Lake Andes were ice-free by the end of January. Ice conditions remained poor (maximum thickness, 10 inches) all winter. The lake was ice-free by March 1.

Statewide, February's recorded weather data was the second warmest, second driest, and second lowest snowfall since 1931. A local farmer was even seen disking on February 2.

As expected, wintering populations of wildlife came through the winter in excellent shape. The stage was set for one of the best ringneck pheasant nesting seasons in years.

During the last week in March heavy rains totaling 7.7 inches fell during a one week period that produced heavy runoff. Wetlands over much of southeast South Dakota already had excellent water levels. Once the water stopped running nearly all wetlands were brim full. The water level in Lake Andes rose nearly four feet over the normal high water elevation. On March 26, the north and south dikes were overtopped by water (for the second year in a row). Many roads in the

southern half of the district were blocked by high water. Suddenly it became a challenge just to visit WPAs in Douglas, Charles Mix and Aurora Counties.

Lake Andes water elevations peaked at nearly four feet over the set high water mark in April and flooded the dikes for the second year in a row.
87 NR 1
4-8-87 BTS

Conditions changed during April-June from very wet to very dry. Only 3.38 inches of precipitation fell during this period. Normal rainfall is 9.06 inches. Row crops that were not planted early in the season germinated poorly.

By the end of August water levels in Lake Andes had drained down to the set outlet level of 1437.25 msl.

Fall weather was beautiful. One shot of 4.13 inches of rainfall fell in September, but there was no runoff because of extremely dry soil conditions. Farmers had excellent conditions for the fall harvest and most crops were out by mid November. Farmers had ample opportunity to do fall tillage until 8 inches of snow fell on 12/23 and halted field work for the winter.

1987 climatic conditions recorded at Pickstown, SD.

| | Snowfall | Total Precipitation | Temperatures (F.) High | Low |
|---|---|---|---|---|
| January | ---- | 0.05 | 66 | -4 |
| February | 2.5 | 1.08 | 70 | 16 |
| March | ---- | 7.70 | 81 | 11 |
| April | ---- | 0.87 | 88 | 23 |
| May | ---- | 1.25 | 91 | 39 |
| June | ---- | 1.26 | 98 | 49 |
| July | ---- | 4.26 | 102 | 50 |
| August | ---- | 2.16 | 99 | 41 |
| September | ---- | 4.13 | 91 | 42 |
| October | ---- | 0.37 | 85 | 20 |
| November | ---- | 1.16 | 67 | 20 |
| December | 8.0 | 1.17 | 66 | -7 |
| Totals | 10.5 | 25.46 | | |
| Normals | 25.2 | 21.37 | | |

## D. PLANNING

### 5. Research and Investigation

Lake Andes NR85 - Owens Bay Waterfowl Nesting Study

This study, started in 1985, was to determine the density, nesting success, and habitat preferences of upland nesting waterfowl on the Owens Bay Unit when nest predators were controlled. Trout Waterfowl Production Area was included in the study as a comparison area, but without predator control. It has similar habitat types.

Waterfowl nests were located using a cable-chain drag pulled by two four-wheel drive vehicles driving parallel through the cover. Two nest drags were completed, one starting on May 14 and another on June 8, 1987. Cover types searched on Owens Bay included 149 acres of native grass, 71 acres of brome/sweet clover DNC, and 40 acres tall wheatgrass/sweet clover DNC. On Trout WPA, 111 acres of native grass and 22 acres of brome/sweet clover DNC were nest searched. Twelve raccoons and 2 skunks were removed on the Owens Bay predator control unit prior to and during the nesting season.

A total of 181 nests were located on Owens Bay and 80 on Trout WPA. The most common nesting species was blue-winged teal comprising 58.2% of the nests (152). The remaining nests located were mallard (48), gadwall (47), shoveler (6), pintail (5), green-winged teal (2), and wigeon (1). For all species, nesting success was 48.0% Mayfield on Owens Bay versus 10.0% Mayfield on Trout WPA. This compares to 1986's finding of 44.8% and 22.1% respectively and 48.4% and 18.8% in 1985.

Nest densities for all species were the highest in brome/sweet clover DNC (1 per 0.94 acres) compared to native grass (1 per 1.46 acres). Blue-winged teal, mallard, and gadwall nest densities were the highest in DNC. Nest densities for these species were slightly lower in native grass. Similar preferences were found in 1986.

The total estimated costs to control predators on Owens Bay was $591.25.

## E. ADMINISTRATION

### 1. Personnel

Lake Andes NWR staff (L. to R.) Back Row: 8, 7, 5, 1, 3, 4, Front Row: 2, 11, 6, 9, 10

87 NR 2
8-10-87 BTS

#### Permanent

1. Bill Wilson, GS 12 . . . . . Refuge Manager
2. Bruce T. Schoonover, GS 11 . . . . . Refuge Manager
3. John Jave III, GS 9. . . . . Refuge Manager
4. Ejner Frandsen, WG 8 . . . . . Maintenance Worker
5. Pam Nagel, GS 6 . . . . . Refuge Assistant (Typing)

#### Career Seasonal

6. John L. Eldridge, WG 3 . . . . . Laborer
7. John Fuchs, Jr., WG 3. . . . . Laborer
8. Leon E. Kirchhevel, WG 3 . . . . . Laborer
9. Eugene J. Slaba, WG 3. . . . . Laborer

#### Summer Temporary

10. Steve Krentz, GS 3 (5/10 - 08/28). . . . Biological Aid
11. Richard Rolston, GS 3 (5/10 - 11/21) . . Biological Aid

Table 1. Lake Andes Complex staffing pattern, 1983-87

| Year | Permanent Full Time | Permanent Part Time | Temporary | Total FTE |
|---|---|---|---|---|
| 1987 | 5 | 4 | 2 | 8.59 |
| 1986 | 5 | 4 | 4 | 9.38 |
| 1985 | 5 | 4 | 4 | 9.02 |
| 1984 | 5 | 4 | 1 | 8.15 |
| 1983 | 5 | 4 | - | 7.65 |

2. Youth Programs

The Lake Andes NWR Complex did not host a YCC program in 1987 because of YCC budget constraints.

4. Volunteer Program

A total of 30 volunteers worked 204 hours for the Lake Andes Complex. Habitat maintenance was the primary service. Most of our volunteers are farmers who keep the roadsides mowed on township roads which border WPAs.

5. Funding

The Lake Andes National Wildlife Refuge also administers the 20 county Lake Andes Wetland Management District and the Karl E. Mundt National Wildlife Refuge. Funding for both refuges and the district is consolidated within a single annual appropriation (Table 2).

Table 2. Annual appropriations and manpower levels since 1983, Lake Andes National Wildlife Refuge Complex.

| Fiscal Year | O&M Budget | BLHP Budget | Large ARMM's Project | Manpower S/D |
|---|---|---|---|---|
| 1987 | 301,000 | -- | 27,000 | 2,260 |
| 1986 | 278,000 | -- | 63,000 | 2,343 |
| 1985 | 330,000 | -- | 41,000 | 2,221 |
| 1984 | 230,000 | -- | 66,000 | 2,120 |
| 1983 | 227,000 | 45,000 | -- | 1,990 |

## 6. Safety

Monthly safety meetings were held in conjunction with personnel from the local Soil Conservation Service office. Some of the subjects included pesticide poisoning, treatment of accident victims, boating safety, the correct use of fire fighting equipment and defensive driving.

Refuge personnel attended a defensive driving course at the Public Health Hospital in Wagner, SD on June 25-26. Personnel that needed training from the Madison WMD also attended.

Members of the refuge staff were certified on various pieces of equipment by Berle Meyers from Sand Lake NWR on July 13-14.

87 NR 3
7-13-87 BTS

One lost time incident occurred in 1987. Biological Aid Steve Krentz was lost from work for a total of 60 hours. He had contracted a case of tularemia. At first it was thought that he had a case of pesticide poisoning. On July 17, 1987, Steve had been spraying weeds on various WPA's in the district with 2,4-D ester. On this particular day the temperature was in the high 90's and his pickup began over-heating. He turned off the air conditioner and opened the window. This apparently allowed vapors to enter the cab of his truck.

Monday morning, July 20, Steve called in and said he was not feeling well and would not be in for that day. He visited a physician on Monday afternoon. The doctor did not give a

positive diagnosis, but indicated it could be a toxic reaction to the chemical. Steve missed a half day on Tuesday and visited the doctor again on Wednesday, July 22. A chest X-ray was taken on that visit and a small spot was found on his left lung that was thought to be a result of pesticide fumes. The doctor indicated it would take two or three days to clear up and he would be fine.

Steve returned to work, but continued to feel poorly into the month of August. He still continued to experience occasional flu-like symptoms.

In August, Manager Wilson attended a disease workshop taught by Dr. Locke and Dr. Windingsted in conjunction with the Project Leaders meeting at Quivira NWR, KS. He noted in the discussion about the disease tularemia, that many of the symptoms in humans were similar to those that Steve was experiencing. Steve was then asked to be tested for tularemia. It turned out positive. It was not pesticide poisoning. Lake Andes Refuge had experienced a summer die-off of cottontail rabbits and the disease was diagnosed as tularemia. The disease can be contracted by humans from rabbits, contaminated water, or flies and ticks in the area. Steve probably contracted the disease while working on the refuge waterfowl nest drag study.

A lesson to be learned from this is that employees with unusual health problems should make doctors aware of their profession and any possible contacts with diseased wildlife.

The safety aspects of our pesticide spraying program was examined more closely after the Steve Krentz incident. Several new pieces of equipment including disposable coveralls, latex gloves, rubber boots and new respirators were purchased for the program. In addition, the last purchase of 2,4-D was in 2.5 gallon containers instead of 30 gallon drums. This should eliminate some of the steps in handling and reduce spills.

## 7. Technical Assistance

Assistant Refuge Manager Schoonover met with ASCS in Canton, SD about a drainage commencement determination in Lincoln County on November 9, 1987. The land owner's case was based on the evidence that he had started work on the drainage before the December 23, 1985 date outlined in the Farm Bill and was seeking full benefits. The landowner provided the review board with various documents proving that the project had begun before the magic date and Schoonover agreed with the land owner.

Refuge Manager Wilson met with the SCS on November 25, to examine the proposed drainage of a type III wetland in Yankton County to make a minimal effect determination. The FWS did not agree that drainage of the wetland would have a minimal effect on the biological environment of the area.

Assistant Refuge Manager Jave accompanied Nel McPhillips of the Pierre ES Office on an inspection of a Corps of Engineers project proposal to straighten the mouth of Randall Creek below Ft. Randall Dam. The area is used by wintering bald eagles. It was determined the project would have little effect on the eagles habitat, but would help solve erosion problems in the Corps campground.

## F. HABITAT MANAGEMENT

### 1. General

Nineteen eighty-seven was a good year for wildlife on the Lake Andes Refuge. Early spring precipitation and unseasonably warm temperatures caused refuge grasslands to prosper. This set the stage for excellent nesting conditions for waterfowl and upland game.

Dryer weather during May, June, and July slowed the response by warm season natives to spring short term grazing treatments. The lack of soil moisture resulted in poor germination on one of the refuge milo food plots and replanting was necessary. As a result the seed never matured.

### 2. Wetlands

Lake Andes is a 4730 acre meandered lake whose water level depends entirely upon annual runoff. Two dikes cut the lake into three units, the North, Center, and South. Stoplog water control structures are located within each dike. The lack of a permanent water supply precludes any water level manipulations.

In 1986, Lake Andes filled for the first time since 1962 and remained at full pool elevation through the winter of 1986-87. A mild, open winter allowed ice-out on Lake Andes on March 1. The open winter with little snow resulted in almost no runoff from snowmelt. Three inches of rainfall on March 15-21 raised all pools to the elevation of 1438.91 feet msl. On March 26, the North and South dikes were covered with water. Additional heavy rainfall raised the lake elevation to a peak of 1441.09 feet msl on April 3. The excess water continued to drain through the outlet structure until it reached the set high water mark of 1437.25 feet msl on September 1. The lake elevation at freeze-up was 1436.8 feet msl.

Lake Andes habitat conditions in 1987 remained very similar to those of 1986. The rapid increase in water levels in 1986 drowned out approximately 95% of the cattail stands and eliminated much of the production of submergent vegetation. In 1987, submergent species recovered somewhat but, production was far below average because of the deep water conditions. Waterfowl production on the refuge has been severely limited by the lack of pair and brood habitat.

The Owens Bay Unit is a 240 acre marsh, separated by a dike from the South Unit of Lake Andes. A stoplog water control structure is located in the dike to allow water releases into Lake Andes. Owens Bay, in addition to water from natural runoff, is maintained by a free flowing artesian well which has a 800-1000 gpm flow and water right.

On March 16, a gradual draw-down was begun on Owens Bay. The artesian well flow was lowered and cycled through the prairie ponds into Lake Andes. Owens Bay had not been drawn down since 1973-74. Since then it had been held at full pool when possible. By September the bay had drained as low as possible, but 150 acres of 6"-8" deep sheet water still remained. It was impossible to completely drain the main pool, because of a sediment buildup in front of the outlet and high water elevations in Lake Andes, without blasting a trench or using specialized equipment to dig a trench. Owens Bay will be flooded in 1988.

Owens Bay was drawn down as much as possible to winter kill the existing bullhead population as well as improve waterfowl habitat.

87 NR 4
9-28-87 BTS

## 3. Forests

A 8 row shelterbelt approximately one half mile long was planted on the southeast side of Owens Bay. The shelterbelt was planted at the request of Charles Mix County to serve as a living snow fence for the adjacent county road. It should also provide excellent habitat for wintering wildlife populations.

A new shelterbelt was planted on Owens Bay to trap snow and provide winter habitat.

87 NR 5
4-22-87 BTS

## 4. Croplands

Following the 1973 DVE outbreak, the objectives of the Lake Andes NWR were changed from providing a wintering area to waterfowl production. Nearly 300 acres of cropland were seeded to nesting cover. Small foodplots are now planted for resident wildlife. A milo-oats/sweet clover rotation is used. No insecticides are used in the farming operation. The herbicide 2,4-D is used when needed on the milo plots. The refuge experimented with planting 3.5 acres of soybeans as a wildlife food crop in 1987. We experienced very high winter usage by pheasants and deer. Soybeans seem to remain upright and do not drift in with snow as bad as other crops.

Table 3. Farming program, Lake Andes NWR, 1987

| Area | Crop | Acres |
|---|---|---|
| North of Exp. Tree Plot | Soybeans | 3.5 |
| Owens Bay 10-2 | Blackbird resistant Milo | 14.0 |
| Owens Bay F2 (N 1/3) | Oats/sweet clover | 10.0 |
| Owens Bay F2 (S 2/3) | Blackbird Resistant Milo | 23.0 |
| SCS Tree Plot | | 2.0 |
| | | 52.5 |

Food plots are planted force account on Owens Bay to benefit resident wildlife.

87 NR 6
10-1-687 BTS

5. Grasslands

Refuge grasslands are generally managed in one of three ways; controlled grazing, burning, and haying. These treatments are used to reduce invader species such as Kentucky bluegrass and smooth brome from the native grass areas. Treatments are also applied to prevent the accumulation of mulch that restricts new growth.

This re-established native grass field had been grazed at 1 AUM/acre during May and . . .

87 NR 7
6-12-87 BTS

. . . The response by warm season natives was tremendous.

87 NR 8
9-25-87 BTS

7. Grazing

Grassland units G-1c and 13b were control grazed in 1987 (49 acres). Unit G-1c is a 40 acre re-established native grass unit seeded in 1977. Unit 13b is a brome unit invaded with Russian olive trees. This grassland was grazed with 1 AUM/acre from late April to June 1. The post-graze vegetative response of the native species was delayed by lack of precipitation in June. Late summer rainfall caused the growth of warm season species to explode. However, since growth had been delayed the seed failed to mature. The graze was designed to stress cool season invaders such as brome and Kentucky bluegrass during their critical growing period, reducing competition for the more desirable warm season natives.

8. Haying

Portions of three DNC units (13a, 13a4, and G-2 totaling 57 acres) were hayed in 1987. All were hayed by a refuge permittee in late July. Two of the DNC units consist of tall wheat grass, alfalfa and sweet clover and provide heavy, dense upright nesting cover. Nest drag studies indicated that this DNC mix gets far more waterfowl nest initiations the season following a haying treatment when regrowth is 8-12 inches high.

Unit G-II was also light disked to invigorate the root-bound brome and stimulate the alfalfa. In August this unit was interseeded with alfalfa in an effort to increase the legumes in the stand.

87 NR 9
8-4-87 BTS

9. Fire Management

No prescribed burns were conducted and no wildfires occurred on the Lake Andes NWR during 1987.

10. Pest Control

The refuge conducts a noxious weed control program in accordance with South Dakota state law. The primary noxious weeds on Lake Andes Refuge are Canada and musk thistle. Spot spraying with 2,4-D on trouble areas has proven semi-effective in reducing these pest species. Charles Mix County is currently experiencing a wet cycle and we have seen a dramatic increase in thistles in the county.

11. Water Rights

The Lake Andes NWR has a 1000 gpm water right from the South Dakota Division of Water and Natural Resources for the Owens Bay artesian well. This water is used to flood 13 acres of the Prairie Pond Complex and supplement Owens Bay water levels. During periods of high water the well can be shut down. During periods of draw down the water is diverted into Lake Andes.

## G. WILDLIFE

1. Wildlife Diversity

The secondary goal of the Lake Andes NWR management program is wildlife species diversification, superseded only by waterfowl production. The refuge program is aimed at providing a prairie ecosystem that will support a variety of wildlife species indigenous to the grassland habitat type. Since the prairies were historically maintained by large grazing herbivores, such as buffalo, and by prairie wildfire, controlled grazing and burning are used today in an attempt to re-create these natural conditions.

2. Endangered and/or Threatened Species

Wintering bald eagles are annual visitors to the Lake Andes NWR. They are attracted by large concentrations of migratory waterfowl and wintering resident wildlife populations on Owens Bay. The birds use a grove of mature cottonwood trees along the shoreline of the South Unit of Lake Andes for their night roost. Up to 8 birds used the roost during January, but numbers were highly variable. This was down from 16 bald eagles in 1986.

Bald eagles often pause on spring migration to hunt the shoreline of Lake Andes for winter-killed fish.

87 NR 10 JJ

3. Waterfowl

Up to 4,000 Canada geese and 3,000 mallards took advantage of the mild, snow free January weather to alternately use Lake Andes and the Missouri River. As the ice fishing activity picked up on Lake Andes, the birds tended to use Owens Bay and the river more.

The first spring migrants were 300 pintails seen on Johnson's Bay on February 13. This was about 10 days earlier than normal. An estimated 7,000 Canada geese (peak number), 10,000 mallards, 350 common goldeneye and 200 common mergansers also arrived on the 13th. The first gadwalls arrived on March 3 and blue-winged teal did not show up until March 31. The Lake Andes duck population for the spring migration peaked at 19,850 ducks on March 3. Mallards, pintails, redheads and scaup were the primary species present during this peak.

The coordinated Annual Mid-Continent White-Fronted Goose Survey that was to be conducted on March 17 was rained out. However, a total of 685 white-fronts were sighted in the vicinity of the refuge from February 27 to March 19.

Lake Andes participated in the Mid-Winter Waterfowl Survey in early January. The State of South Dakota normally does an aerial survey of Lake Andes for this count. This year most

geese were feeding in the surrounding fields and the State failed to get a count. Our census indicated 2,800 Canadas on the refuge on 1/8.

A breeding pair count was conducted by airboat on Lake Andes and Owens Bay during May. The total number of breeding pairs was 787, up 57% from 1986 and very similar to 1985. The most common nesting species were blue-winged teal, mallard, and gadwall. In 1987, no redheads were counted on the spring pair counts. The high water conditions have drowned out nearly all stands of emergent vegetation used for nesting sites. This compares to a high of 292 pairs of redheads in 1983. Lake Andes should, however, provide good habitat conditions long after most habitat off refuge goes dry.

No redheads nested on Lake Andes in 1987 because emergent vegetation had been drowned out by deep water.
87 NR. 11 JJ

Waterfowl production is estimated by using nest drag data and the breeding pair count (Table 4). An estimated 1,656 ducklings were produced in 1987. This represents a 20% increase in production from 1986. The increase was due to better habitat conditions on Lake Andes.

Table 4. Estimated waterfowl production, by species, on the Lake Andes NWR, 1987.

| Species | Pairs | Estimated Production | % of Pop. | % Change From 1986 |
|---|---|---|---|---|
| Blue-winged Teal | 292 | 657 | 37.0 | + 12 |
| Mallard | 213 | 479 | 27.0 | +136 |
| Gadwall | 150 | 338 | 19.0 | +131 |
| Pintail | 53 | 119 | 7.0 | +141 |
| Wood duck | 52 | 117 | 6.6 | +136 |
| Shoveler | 18 | 41 | 2.3 | + 80 |
| Ruddy | 4 | 9 | 0.5 | - 60 |
| Green-winged Teal | 3 | 7 | 0.4 | |
| Scaup | 1 | 3 | 0.1 | |
| Wigeon | 1 | 3 | 0.1 | |
| Totals | 787 | 1773 | | |

October waterfowl populations on Lake Andes peaked for the month on October 28 with 15,075 ducks and 35 geese. Primary species included 6,400 mallards, 2,825 scaup, 1,800 ruddy ducks, and 1,350 redheads. Approximately 500 canvasbacks used the North Unit. October populations of diver species were about half of normal. On November 9, a major influx of birds moved into the area. Refuge populations peaked at 30,000 mallards and 18,000 snow geese. Up to 8,000 snow geese and 15,000 mallards remained in the area until December 10 when weather conditions forced them to migrate.

A peak of 18,000 snow geese used Lake Andes in November. The number of snow goose use days has been trending upward.

87 NR 12 JJ

An unusual sighting of a pair of old squaw was made on Lake Andes on December 15 by Schoonover and Jave.

4. Marsh and Water Birds

Up to 2,000 double crested cormorants and 500 white pelicans paused during their spring migration to dine on fish in Lake Andes.

Colonial nesting birds are censused annually on Lake Andes for the Colonial Bird Register. The survey was conducted on July 29, and the following species were censused: black-crowned night herons - 275 nests, cattle egrets - 125 nests, snowy egrets - 40 nests, great egrets - 20 nests, and great blue herons - 12 nests. The number of black-crowned night heron nests was down from the estimated 360 nests in 1986. Most likely because of the excellent habitat available off-refuge. No eared grebes nested on the refuge in 1987 because of the lack of suitable nesting habitat. Also, we normally have approximately 50 pairs of western grebes that nest on Lake Andes, but in 1987 less than 10 pair nested on the North Unit. All species except the western grebes nest in one large colony located in flooded Russian olive trees in Johnson's Bay.

A colony of five different species of marsh birds nested in flooded Russian Olive trees in Johnson's Bay on Lake Andes.

87 NR 12
7-29-87 BTS

5. Shorebirds, Gulls, Terns and Allied Species

The high water levels flooded new upland areas around Lake Andes. As water levels receded throughout the summer, extensive mudflats were exposed that provided ideal habitat for numerous species of shorebirds. Killdeer, lesser yellowlegs, long billed dowitcher's and several species of sand pipers were the most common. Other species sighted on Lake Andes in 1987 included ring-billed and Franklin's gulls, common snipe, common and black terns, American avocet and Wilson's phalarope.

6. Raptors

A variety of raptors are attracted to the refuge each year by the high pheasant populations and abundant small mammals and rodents. Species recorded in 1987 included red-tailed hawks, rough-legged hawks, sharp-shinned hawks, Coopers' hawks, ferruginous hawks and northern harriers. Great horned owls and screech owls use the refuge for nesting. Short-eared owls are rare visitors.

Injured wildlife is often turned into the refuge. During the year one rough-legged hawk that had been hit by a vehicle was turned in. It was successfully released after a period of rehabilitation.

Sightings of golden eagles are common during the winter months on Owens Bay as they are attracted by the high populations of resident wildlife.

7. Other Migratory Birds

Mourning doves remain one of the most prolific nesting species on the refuge. Excellent nesting habitat is provided in refuge shelterbelts and the SCS tree plot. Nesting success was likely higher than normal this year due to the lack of wet, windy weather during the spring and summer.

8. Game Mammals

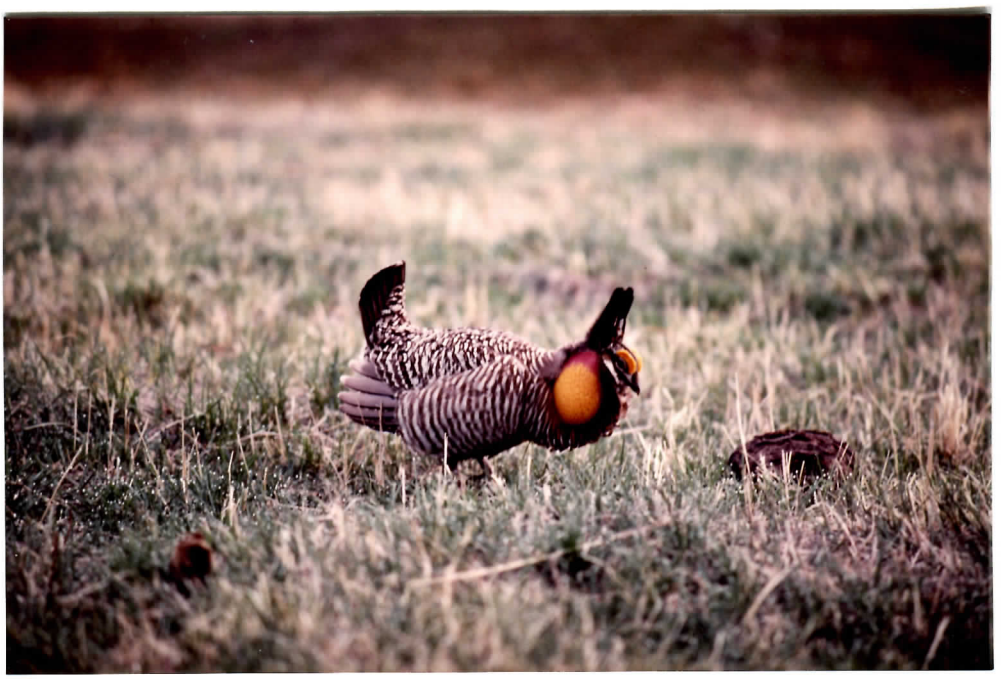
The wintering population of white-tail deer was estimated to be 50-60 on Owens Bay. This is down from the record high 159 head censused in 1986. The mild winter was probably responsible for the decline. The South Dakota Game, Fish and Parks has also tried to reduce deer numbers in this county by increasing the harvest.

10. Other Resident Wildlife

The ring-necked pheasant is easily the most popular of our local wildlife species. Hundreds of out-of-state sportsmen

are drawn to the state annually to pursue this colorful gamebird.

The wintering population of pheasants on Owens Bay was estimated to be 300-400 birds. This was down from 1986 because of the previous poor nesting season. In 1987, pheasant nesting success in Charles Mix County was above normal due to the warm, early spring and lack of heavy thundershowers. This factor along with the predator reduction program on the refuge improved the 1987 population to an estimated 1,000 birds going into the winter.



Greater prairie chickens have been on the increase in the vicinity of the refuge the last few years. They periodically use the Owens Bay Unit.
87 NR 14 JJ

A single wild turkey hen that took up residency on Owens Bay in 1986 was commonly sighted. Now she needs an available tom.

Lake Andes Refuge did not participate in the 1987 Audubon Christmas Bird Counts because of staff commitments during the holidays. It is hoped that local birders will organize the count for 1988.

## 11. Fisheries Resources

Fisheries winter kill on Lake Andes was of no concern during the winter of 1986-87. Clear ice, little snow, and early ice-out resulted in high dissolved oxygen levels throughout the winter. Lake Andes has a reputation for winter kill because of normally shallow water depths and high amounts of aquatic vegetation.

Fisheries surveys in 1986 indicated that 90% of the biomass in the North Unit and 65% of the Center Unit was composed of black bullheads. The result was virtually no recruitment of largemouth bass, yellow perch, or bluegill because of the predatory activities of the large bullhead population. Commercial harvesting of the bullheads was one of the few feasible management options. A commercial fishing contract was issued by the Game, Fish and Parks Department to Jack Raw whose business is based in Minnesota, to remove 675,000 lbs. of bullhead per year for the next three years. During 1987, 275,000 lbs. of bullheads were removed by commercial netting (pocket nets) from the Center and South Units of Lake Andes. Outlets for the fish included wholesale fish markets and "pay to fish" businesses in Indiana, Ohio and Missouri.

Fish stocking in Lake Andes in 1987 included 100,000 northern pike fingerlings (Center Unit) on May 15 and 100,000 bluegill fingerlings on September 1. Fifty thousand were stocked in each of the Center and South Units.

Bluegills being stocked in the Center Unit of Lake Andes.

87 NR 15
9-1-87 BTS

A fish die-off occurred on Lake Andes in July. It was apparently due to an oxygen shortage caused by an extended period of extremely hot weather combined with a heavy algae bloom. Many young-of-the-year bass and perch were lost.

High water temperatures combined with an algae bloom resulted in a partial fish summer kill on the South Unit of Lake Andes in August.
87 NR 16 JJ

Personnel from Valentine FAO completed a fisheries survey on August 25-27. Electrofishing, and frame and gill nets were used to collect the fish samples. They found that the bullhead biomass was down slightly from 1986 and the recruitment for this species was extremely low. Apparent conclusions were that largemouth bass represent as much as a quarter of the fish biomass in the North and Center Units. They also found that recruitment was good for bluegill and yellow perch. It seems that fish populations in Lake Andes are in much better shape than the 1986 survey indicated. The partial summer kill was not significant enough to change the fish composition. Carp were also increasing in numbers, but still represent a very small portion of the biomass present.

Owens Bay was drawn down during the summer of 1987 to kill the existing fish population and increase its attractiveness to waterfowl. In 1988 northern pike, largemouth bass and perch will be stocked in the 270 acre marsh. Once established, this population will be used as a stocking source as needed for Lake Andes.

Another recommendation was to place a 15 inch size limit on largemouth bass in Lake Andes. This was suggested to the South Dakota Game, Fish and Parks Department, but was not implemented for 1988.

15. Animal Control

Waterfowl nest predators were controlled for the fourth year on the Owens Bay Unit. Control was limited to the native grasslands on the north side of the bay, an area with a traditionally high waterfowl nest density. Control was directed at raccoons and skunks, the primary nest predators identified during a three year nesting study. Tomahawk live traps, baited with sardines and chicken eggs were used prior to and during the waterfowl nesting season. Trapping was begun on February 19 and ended July 17. A total of 12 raccoons and 2 striped skunks were caught. All target species were dispatched. No non-target species were affected by the control program.

17. Disease Prevention and Control

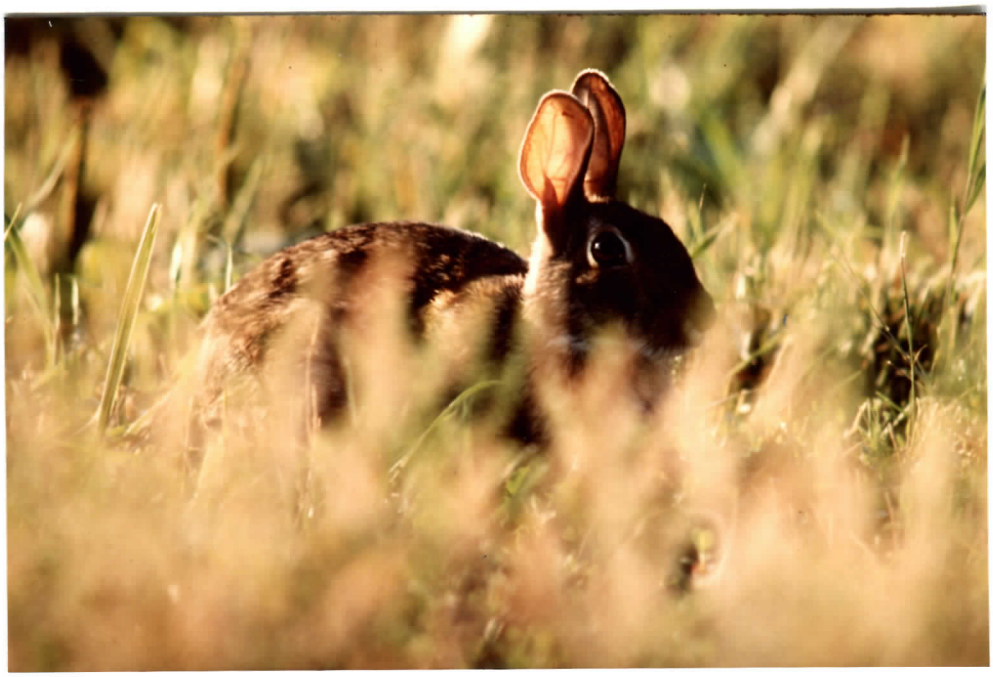
Periodic disease monitoring trips are made over Lake Andes each year. An outbreak of botulism was discovered on Owens Bay on August 20. Specimens sent to the National Wildlife Health Lab for diagnosis confirmed the cause as Type C botulism. The refuge crew picked up and incinerated 598 dead birds by September 15 when losses ended with the onset of cooler weather. Waterfowl mortality due to botulism on Lake Andes is rather common with recent outbreaks in 1984 and 1985. Table 5 gives a summary of the birds collected by species.

Table 5. Waterfowl and bird species collected during botulism outbreak on Owens Bay, 1987.

| SPECIES | NUMBER PICKED UP |
|---|---|
| Blue-winged Teal | 192 |
| Mallard | 143 |
| Green-winged Teal | 87 |
| Pintail | 72 |
| Coot | 42 |
| Unknown duck species | 33 |
| Gadwall | 14 |
| Shoveler | 7 |
| Yellowlegs | 5 |
| Sandpiper species | 2 |
| Wigeon | 1 |
| | 598 |

The principle attributing environmental factor responsible for the die-off was that Owens Bay had been drawn down. The unit could not be drained completely because the outlet was slightly higher than pool bottom leaving approximately 100 acres of up to 10 inch deep water. Extremely hot weather during this period probably created anaerobic conditions favorable for the botulism bacteria.

In June, a cottontail rabbit, one of many found dead on the refuge, was submitted to the Veterinary Science Diagnostic Laboratory at South Dakota State University for a diagnostic examination. The laboratory results indicated that the rabbit had tularemia.



The refuge cottontail rabbit population crashed in June when an epidemic of tularemia swept through the population.

87 NR 17 JJ

## H. PUBLIC USE

### 1. General

Lake Andes attracts fishermen, waterfowl hunters and wildlife enthusiasts from all across the State. Many of these people stopped at headquarters to ask for information and took the opportunity to view the displays and talk about the refuge.

2. Outdoor Classrooms - Students

The refuge saw a decrease in visits from local school systems in 1987. The high water in Lake Andes flooded the dikes making access difficult. The nature trail was also inundated for one half its length. The headquarters basement is used to house our interpretive items and is used for refuge talks. The basement was flooded during much of the spring and summer. Interpretive displays were damaged and displays had to be stored in high and dry locations.

Several talks both off and on the refuge, slide programs, and tours were given during 1987. Table 6 summarizes refuge programs.

Table 6. Lake Andes NWR Complex I & R Programs given during 1987.

| Date | Program | Attendance |
|---|---|---|
| 03/27 | Jave had a booth at the Marty Science Fair about wildlife. | 150 |
| 05/18 | Schoonover presented a program about the refuge to the Wagner Elementary School, Third Grades. | 60 |
| 05/26 | Jave presented a program about birds to Armour Elementary School, First Grade. | 15 |
| 05/26 | Jave gave a program about the refuge to the Ravinia Cub Scouts. | 7 |
| 06/15 | Jave gave a program about the refuge to Lake Andes Cub Scouts. | 7 |
| 07/13 | Jave gave a program to the Wagner Girl Scouts about the refuge. | 12 |
| 07/15 | Schoonover gave a program to the Wagner Rotary Club about Lead poisoning and steel shot. | 35 |
| 10/26 | Schoonover presented a program to the White Lake Sportsmans Club about WPA management. | 30 |
| 11/02 | Jave presented a program to the Lake Andes Boy Scouts about waterfowl. | 12 |

4. Interpretive Foot Trails

The Owens Bay nature trail and picnic area is open to the public year around. These facilities have experienced an increase in visitation because of the improved fishing on Lake Andes. Unfortunately, nearly half of the nature trail, which was constructed in the mid-1970's, has been flooded by the high Lake Andes water levels. About 75 yards of boardwalk, which is the most popular part of the trail, was constructed below the high water mark and is now partially submerged or floating. There won't be much left once winter ice action takes its toll. A new boardwalk above the high water mark will be constructed as soon as water levels recede. In the mean time an alternate route has been developed.

6. Interpretive Exhibits/Demonstrations

The headquarters office and a kiosk on the site serve as the primary contact station. Mounted specimens, interpretive displays, and a System 70 display are housed in the headquarters basement. This area is used to show films to visiting school groups and refuge orientations.

In 1987 the refuge manned a booth with display at the Charles Mix County Mid-Winter Fair in Lake Andes on January 20 and 21. Approximately 850 people attended the fair and viewed the exhibit. The FWS display was on loan from Waubay NWR.


Nagel and Jave staffed an exhibit concerning refuge programs at the annual Charles Mix County Fair.

87 NR 18
1-20-87 BTS

8. Hunting

The Center Unit of Lake Andes, which consists of 2,000 acres is open to hunting. Duck season opened on October 3 and closed November 22. Habitat conditions were similar to 1986, and most early migrants preferred to utilize small wetlands off-refuge rather than the open water type habitat that Lake Andes provided. Hunting pressure on Lake Andes is generally light with most gunners preferring to pass shoot from the dikes that border the Center Unit. The bag usually consists of diver species with a few gadwalls and northern shovelers.

Lake Andes traditionally provides excellent decoy hunting for mallards and divers once the small wetlands have frozen. However, for the last few years Lake Andes has remained ice-free until well after the waterfowl season has closed. Local gunners have missed most of the "prime time" for late season corn field shooting. Part of Charles Mix County is in a special late zone which opens and closes two weeks later than the rest of the State. Efforts are being made to move Lake Andes into this zone. The late zone was set up to take advantage of late migrating mallards along the Missouri River. Flight patterns have changed during recent years because of agricultural cropping trends. Irrigated corn fields are now planted bordering the huge reservoir in the north central part of South Dakota. Ducks and geese have no reason to migrate because they have refuges, food, and open water that does not freeze until late December-early January.

Steel shot was required for all waterfowl hunting in South Dakota in 1987. Compliance with the regulation was good in the Lake Andes area.

Deer and pheasant hunting was not possible on the Center Unit of Lake Andes in 1987, the only area open to hunting. The thick cattails and kochia that once harbored pheasants and deer in the lake bed is now covered with open water.

The Owens Bay portion of the refuge has a reputation with local deer hunters for sheltering big bucks. This area (823 acres) is closed to all hunting and is bordered on three sides by gravel roads. During the deer season there is a steady procession of pickup trucks trying to catch a trophy white-tail outside the boundary fence.

Traffic by the refuge really picks up once deer season opens as hunters hope to catch a buck like one of these outside the refuge boundary.
87 NR 19 JJ

9. Fishing

Fishing had flashes of excellence on Lake Andes during 1987. Ice fishermen were slowed by unstable ice conditions in January and February. But, the Johnson's Bay area of Lake Andes was hot for large yellow perch and bluegill until early February when ice conditions deteriorated. In March and April fishing success was slowed by the flooded conditions on the lake. Summer bass fishing was good at times, but did not really peak out until September. The North Unit provided super fishing for largemouth bass up to two pounds. Perch fishing really took off in November on the Center Unit. Anglers made some outstanding catches with 13-14 inch "hogs" common. The South dike was packed with fishermen and it became an obstacle course just to travel the dike.

Happy summer anglers on Lake Andes.

87 NR 20 JJ

Ice fishing for perch was excellent at times on Lake Andes.

87 NR 21
1-16-87 BTS

14. Picnicking

The Owens Bay picnic area is always popular with local residents. Fishermen who bring their family to Lake Andes often use the area for family oriented recreation and cookouts.

17. Law Enforcement

Two dikes cross Lake Andes, dividing the lake into three units. The Center Unit is open to hunting in accordance with the terms of the easement from the State granting the U.S. Fish and Wildlife Service the right to manage the lake as a migratory refuge. The North and South Units are closed to hunting and trapping, but open to fishing and boating. Most waterfowl hunting consists of pass shooting off the dikes.

Most of the law enforcement load on Lake Andes is handled by State Conservation Officers. One notable catch by the local CO was that of two men fishing on the North dike with 17 largemouth bass over their legal limits. This was a result of a TIP phoned in to our office. Total fines and State civil assessments amounted to $1,985.00.

The mail box and rail fence at headquarters was vandalized during the night of March 3, 1987. The mail box had been intentionally pushed over by a car and was found lying in the middle of the road. They did the same to three sections of the rail fence. The estimated damage was $100.00. The incident was reported to the County Sheriff, but no leads ever developed.

Vandals did an estimated $100 damage to the rail fence and mail box at headquarters in March.

87 NR 22
3-4-87 JJ

In June, Manager Wilson attended a Charles Mix County Commissioners meeting to discuss complaints about fishermen blocking the dike roads with their parked vehicles. Farmers occasionally have difficulty traveling the dike roads with their large implements. Fishermen are limited to parking on one side only, but unfortunately a few individuals don't mind taking up more than their share of the roadway. As a compromise, "No Parking" signs were placed on both sides of the bridges to lessen the vehicle congestion in those areas.

The South Unit of Lake Andes was re-posted with refuge boundary signing in August and September. Many of the signs on this 2,000 acre unit had been destroyed by vandals and ice-action through the years.

The status of Fish and Wildlife Service owned uplands around the North Unit of Lake Andes was changed from "Refuge" to "WPA". These properties were purchased with money from the Migratory Bird Conservation Fund, but closed to help maintain the integrity of the North Unit Refuge. It was determined that closing these lands to public access had little effect on waterfowl use on the area. The North Unit properties were posted as such in September. The lake bed up to the set high water elevation remained in refuge status.

FOC's were issued to two Sioux Falls men for hunting ducks out of season in late November on Lake Andes. One paid while the other requested his case be heard in Federal Court. Jave traveled to Sioux Falls during January 1988 for the hearing. Guilty as charged.

Managers Schoonover and Jave attended the 40 hour law enforcement refresher course in Grand Island, NE on March 16-20, 1987. Wilson, Schoonover and Jave also attended a law enforcement coordination meeting and qualified with their firearms in Sioux Falls on September 16-17, 1987.

Region 6 employees receiving firearm instruction at the 40 hour law enforcement refresher in Grand Island, NE.

87 NR 23
3-18-87 BTS

## I. EQUIPMENT AND FACILITIES

### 2. Rehabilitation

The Owens Bay shop, constructed in 1967 was designed prior to the era of fuel shortages and high energy prices. The building was of uninsulated cement block construction with uninsulated doors. In 1981, the east bay of the building was rehabed by force account. Improvements included insulating the walls and installing a suspended ceiling. A new heating system and fluorescent lights were also installed.

A $27,000 Large ARMM's project was initiated in 1987 to remodel the Owens Bay shop to include a modern vehicle service bay, carpentry shop, welding shop and crew room. The following improvements were made by force account except where noted:

-a six inch insulated plywood partition wall was constructed to divide a 50' x 50' vehicle storage area into two bays 30' x 50' and 20' x 50'.

-The ceiling was insulated to R-26 with a system of fiberglass batts between the purlins and an outside fiberglass layer with plastic vapor barrier. The system was hung from the purlins with clips and rollers.

-steel insulated overhead fiberglass doors were installed in the vehicle service and carpentry bays (installation contracted).

-new wiring, outlets and overhead fluorescent lighting system.

-the side walls were insulated with six inches of fiberglass and faced with blandex and painted.

-a new propane radiant heating system.

-five metal walk-through doors (installation contracted).

-the partition wall was covered with painted steel siding in the vehicle service bay.

-the east bay was divided into a welding area and a crew room with new personnel lockers.

-concrete footing poured to support the vehicle lift.


A insulated ceiling was installed force account as part of a large ARMMs project to modernize the Owens Bay shop.

87 NR 24
6-9-87 BTS

A cement approach was poured at the entrance to the vehicle service bay.

87 NR 25
9-25-87 BW

A 16' x 48' overhead floor was constructed force account for storage in the seven stall building. Shelving and a safety railing were installed around the perimeter. A variety of small refuge equipment, signs, biological items, etc. are stored in this area.

3. Major Maintenance

The stoplog outlet structure for Lake Andes began leaking in January. It was temporarily repaired by replacing the top few stoplogs and plugging leaks. In September lake levels had lowered to where water was not running over the stoplogs. A double set of new 4 inch by 6 inch stoplogs were installed. Future plans are to construct a permanent cement structure with outlet gate.

New stoplogs were placed in the Lake Andes outlet structure in September.

87 NR 26
10-1-87 BTS


Rotted wood siding was repaired on the headquarters 3-stall garage and a new rain gutter was installed.

87 NR 27
10-1-587 BTS

Four water control structures on the Prairie Ponds system on Owens Bay were retrofited with new screw gates. Channels in the concrete stoplog structures were deteriorating.

The refuge supplied a dump truck and driver to assist Charles Mix County in re-graveling the dikes across Lake Andes that had been damaged by flooding.

Broken windshields were replaced in five vehicles during the year.

4. Equipment Utilization and Replacement

A 300 gallon low profile pickup mounted sprayer was purchased during the year to update our aging pesticide spraying equipment. The unit has a 5 hp motor, 28 foot boom and electric remote sprayer control. It is hoped this new unit will reduce the exposure to pesticides by the user and increase efficiency.

Additional equipment acquired during the year, some of which were purchased with the $27,000 Large ARMM's project monies included:

-ten 72 inch steel personal lockers.

-vertical mounted two stage air compressor with 80 gallon tank.

-twin post surface mounted electric hydraulic 9000 lb vehicle hoist.

-John Deere 16 hp lawn tractor with 50 inch mid mower with grass catcher attachment.

-John Deere 21 inch, 3.5 hp push mower.

-three 1000 gallon underground fuel storage tanks.

-Canon 300 mm f4.5 lens.

-Soil Mover 5 yard scraper.

-one mile of polywire electric fence with posts and two chargers for holistic grazing management.


This new John Deere 316 riding lawn mower will be used to maintain the headquarters and shop facilities.

87 NR 28
9-1-87 BTS

One vehicle was replaced during 1987. A new 1987 Dodge three quarter ton pickup was received in April to replace a 1979 Datsun King Cab pickup. Both the Datsun pickup and a 1978 Dodge Ramcharger 4x4 were transferred to the SDSU Coop Unit in Brookings, SD. The refuge will take delivery on a new Chevy Blazer 4x4 sometime in 1988 to replace the Ramcharger.

5. Communications Systems

Three new General Electric 100 watt mobile radios and two portables with chargers were purchased during the year. The mobile units permit refuge, state, and county frequencies to be combined in one unit. The new radios were placed in vehicles used for law enforcement. The old system consisted of one radio for the refuge frequency and one state radio in each vehicle. The portable units were purchased to be used for fire management. Prior to this we had only two portables that could be used on the fire line.

8. Other

An old excess 1800 sq. ft. wooden storage building on Owens Bay was sold to the high bidder for $106.00. The building was moved and the site cleaned up by December. This building had been used for storage and to house the carpentry shop.

Excessed storage building was moved intact to its' new home.

87 NR 29
12-3-87 BTS

The refuge office had water in the basement during the spring/summer due to high water levels in Lake Andes. A sump pump that was installed in 1986 could not keep up. The water soaked carpet was declared a total loss and removed. All furniture and stored items were removed from the water as much as possible. Many items mildewed. Once things dried up a dehumidifier was put into operation. Future plans are on hold until we see what 1988 brings for water levels in Lake Andes.

## J. OTHER ITEMS

### 1. Cooperative Programs

The experimental FWS/SCS tree plot on Owens Bay continues to draw interest from numerous State and Federal agencies. Not only do the trees provide data on species vigor and hardiness, but they also create excellent wildlife food and cover. The FWS accomplishes the between-row cultivation, while planting and in-row cultivation is done by the SCS.

### 3. Items of Interest

Jave attended a Holistic Management Course in Albuquerque, NM on April 6-10 and Schoonover in Grand Junction, CO on June 14-21.

Zone Supervisor, Jim Matthews, and Ron Shupe were at the refuge May 18-22 for an operations inspection.

Wilson attended the semi-annual regional inter-agency meetings at Pickstown in May and October.

Ejner Frandsen was presented his 20-year length of service pin and certificate in August.

87 NR 30
8-31-87 BTS

Wilson and Jave attended the Project Leaders meeting and disease workshop at Quivira NWR on August 17-20.

Nagel attended the administrative workshop held in Denver on October 26-30.

Wilson and Schoonover participated in a joint meeting during October between the FWS, SD Game, Fish and Parks, the Charles Mix County Commissioners, and concerned citizens regarding the future of Lake Andes.

Jim Gillette (WO) visited the refuge on October 19 while in the area bird hunting.

Two weed meetings were attended with county representatives. Jave attended a meeting in Miller on November 10 and Schoonover in Plankinton on November 13.

Wilson met with the Restore Lake Andes Association to discuss methods to keep water in Lake Andes, primarily in the South Unit.

Jave and family moved into the refuge residence from Pickstown after Wilson moved to his newly acquired farm in November.

Wilson and Schoonover attended a grassland tour in the Rainwater Basin hosted by Manager Trout and crew.

87 NR 31
9-16-87 BTS

4. Credits

Nagel wrote Section E.1, and E.5, typed and assembled the report. Schoonover wrote Section F.13. Jave wrote the remainder of the document. Wilson edited and provided moral support.

# KARL E. MUNDT NATIONAL WILDLIFE REFUGE

Lake Andes, South Dakota

## ANNUAL NARRATIVE REPORT

Calendar Year 1987

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

KARL E. MUNDT NATIONAL WILDLIFE REFUGE

LAKE ANDES, SOUTH DAKOTA

ANNUAL NARRATIVE REPORT

Calendar Year 1987

| | | | |
|---|---|---|---|
| Refuge Manager | Date | Refuge Supervisor Review | Date |

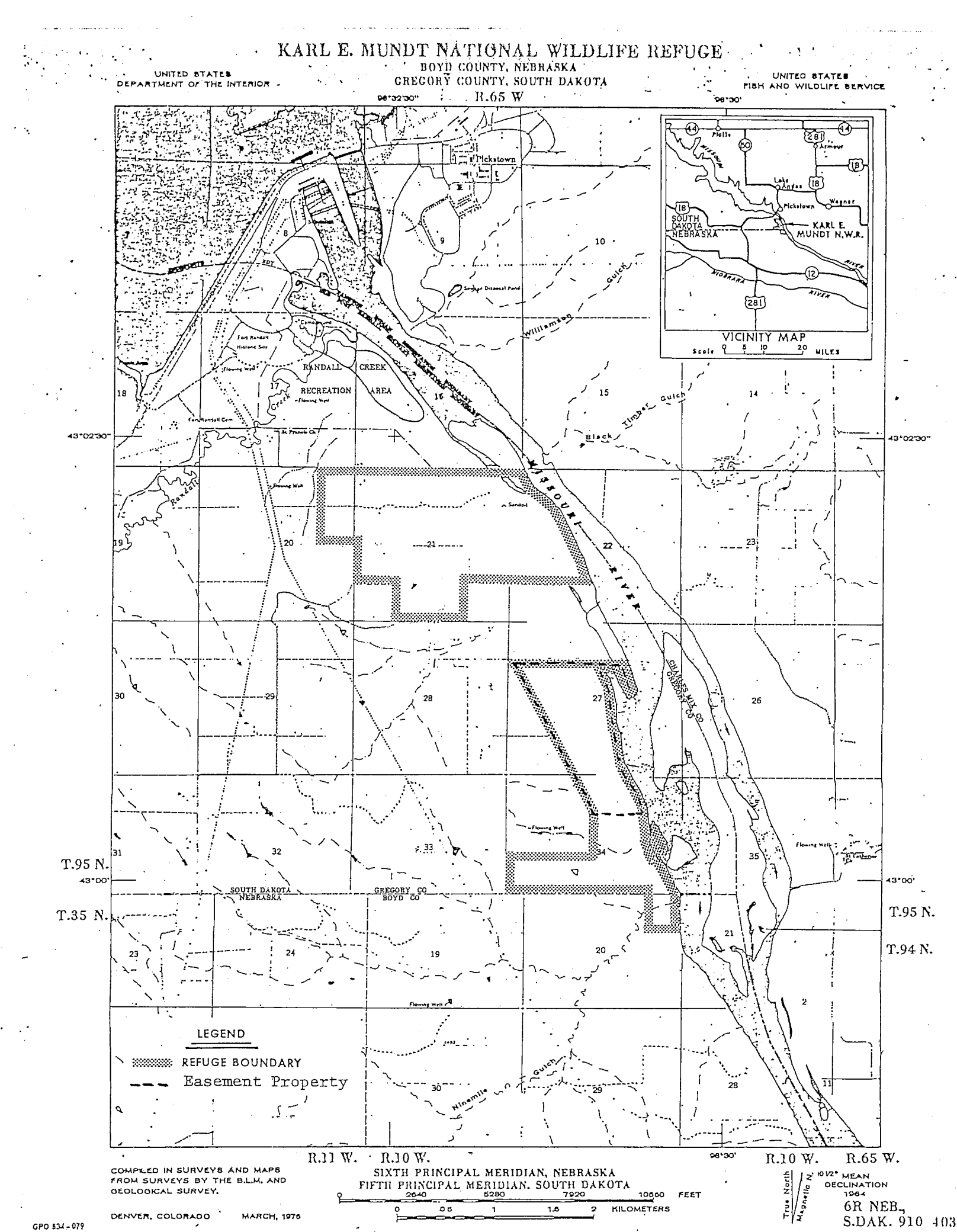
| | |
|---|---|
| Regional Office Approval | Date |

# KARL E. MUNDT NATIONAL WILDLIFE REFUGE

BOYD COUNTY, NEBRASKA
GREGORY COUNTY, SOUTH DAKOTA

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE




COMPILED IN SURVEYS AND MAPS FROM SURVEYS BY THE B.L.M. AND GEOLOGICAL SURVEY.

SIXTH PRINCIPAL MERIDIAN, NEBRASKA
FIFTH PRINCIPAL MERIDIAN, SOUTH DAKOTA

2640 5280 7920 10560 FEET
0 0.5 1 1.5 2 KILOMETERS

True North / Magnetic N. 10 1/2° MEAN DECLINATION 1964

DENVER, COLORADO MARCH, 1976

GPO 834-079

6R NEB.,
S.DAK. 910 403

# INTRODUCTION

The Karl E. Mundt National Wildlife Refuge was purchased by the National Wildlife Federation in 1974. The $250,000 purchase price was provided by the Seven-Eleven Food Stores (a division of the Southland Corporation) and was collected through a national "save an eagle" campaign. On December 19, 1974, in a ceremony at the National Wildlife Federation headquarters, Washington, D.C., the administration of this refuge was turned over to the Fish and Wildlife Service.

Two tracts of fee title land were purchased from John and Mabel Cassidy and totaled 780 acres. The "North Unit" contains 580 acres and lies entirely within the state of South Dakota. The "South Unit" consists of 200 acres, 20 of which are in Nebraska.

Separating the North and South Units is a 305 acre parcel owned by Will Jonas. This tract is protected by a perpetual easement which states that the landowners "...will cooperate in the maintenance of the aforesaid lands as a roosting and nesting grounds for eagles by not changing existing timber, grasses, structures, or appurtenances...". The preservation of the mature cottonwoods, which currently provide eagle roosting habitat was the actual intent of the easement.

Another 300 acre tract (owned by the G. R. Kirwan estate) lies between the Jonas property and the North Unit. Both the Jonas and Kirwan tracts have been identified as potential fee title purchases under the LWCF acquisition program.

The refuge is located 1 1/2 miles down river from Fort Randall Dam. The water releases for hydroelectric generation create an open water area directly below the dam. The open water, plus an abundant supply of various fish species, provides a winter feeding area for the bald eagles. Waterfowl flocks, also attracted to the open water, provide a supplemental food source for the eagles.

INTRODUCTION

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## G. WILDLIFE



## H. PUBLIC USE



## I. EQUIPMENT AND FACILITIES

## J. OTHER ITEMS

Page



K. FEEDBACK . . . . Nothing To Report

L. INFORMATION PACKET - - - (inside back cover)

## A. HIGHLIGHTS

The final attempt to purchase land adjacent to the Karl E. Mundt NWR is unsuccessful (Section C.1).

Twenty-five deer die of EHD (Epizootic Hemorrhagic Disease (Section G.8).

## B. CLIMATIC CONDITIONS

The extremely mild winter that began in November and December of 1986 continued into 1987. The low temperature for the months of January - March 1987, was 4° F. on January 23. Highs of 66° F. in January, 70° F. in February, and 81° F. in March were also recorded. Total moisture received was 1.08" until the last week in March when 7.7" of precipitation was received, mostly in the form of rain and snow. The extreme mild conditions were reflected in the fact that a local farmer was observed disking on February 2, a period when the ground is normally frozen and snow covered.

After the needed precipitation received in late March, conditions again turned abnormally dry, with only 3.38" of moisture received during April - June. On July 10, high winds in excess of 70 mph stormed through the area. The only damage to FWS facilities was downed trees and limbs, but several neighbors lost barns, calving sheds, and roofs off buildings. A total of 4.26" of moisture was received for the month. Precipitation for the remainder of 1987 was unusually low.

Winter conditions that had settled in by December of 1987 looked more like normal. A high of 66° F. on December 10 and a low of -7° F. on December 31 were recorded. Snowfall on December 23 halted all field work for the winter. Estimated ground cover at years end was approximately 8-10" on the Mundt NWR, with the prospects of more to come.

Temperatures: High - 102° F. in July
Low - -7° F. in December

## C. LAND ACQUISITION

### 1. Fee Title

Portions of the G. R. Kirwan estate lie between the North Unit and the Jonas easement and have been identified for roundout purchase. This approximately 300 acre tract would allow complete protection for the bald eagle from the Fort Randall Dam to just below the Nebraska state line, by securing the

property in federal ownership and easement. Acquisition attempts began in 1985, and in June of 1986 an offer of $380,000 for the entire 2,235 acre Kirwan Ranch was rejected. In the spring of 1987, we were approached by representatives of the estate and asked to again submit a bid for purchase because they were now interested in selling. The bid of $380,000 was re-offered and again rejected. The attempt to purchase the land is now a "dead horse" and will not be done again unless the land changes hands, or the current ownership indicates an interest in accepting our present offer.

No plans to condemn the land have been made for several reasons. Vast amounts of land in the immediate vicinity of the refuge were "taken" by the government as a result of the construction of the Fort Randall Dam and subsequent filling of Lake Francis Case. This situation created resentment among many local residents towards any type of government acquisition or management. Great strides in improving public relations with residents of the Randall Valley have occurred, with actual support gained from some. Condemnation would eliminate all positive steps we have gained in this area.

2. Easements

The perpetual easement on the Jonas property provides for the protection of the riparian woodlands by prohibiting the harvesting of trees because of their value as eagle roost sites. The easement was inspected in 1987, with no sign of tree removal.

## E. ADMINISTRATION

### 1. Personnel

Lake Andes NWR staff (L. to R.) Back Row: 8, 7, 5, 1, 3, 4, Front Row: 2, 11, 6, 9, 10

87 NR 1
8-10-87 BTS

#### Permanent

1. Bill Wilson, GS 12 . . . . . Refuge Manager
2. Bruce T. Schoonover, GS 11 . . . . . Refuge Manager
3. John Jave III, GS 9. . . . . Refuge Manager
4. Ejner Frandsen, WG 8 . . . . . Maintenance Worker
5. Pam Nagel, GS 6 . . . . . Refuge Assistant (Typing)

#### Career Seasonal

6. John L. Eldridge, WG 3 . . . . . Laborer
7. John Fuchs, Jr., WG 3. . . . . Laborer
8. Leon E. Kirchhevel, WG 3 . . . . . Laborer
9. Eugene J. Slaba, WG 3. . . . . Laborer

#### Summer Temporary

10. Steve Krentz, GS 3 (5/10 - 08/28). . . . Biological Aid
11. Richard Rolston, GS 3 (5/10 - 11/21) . . Biological Aid

Table 1. Lake Andes Complex staffing pattern, 1983-87

| Year | Permanent Full Time | Permanent Part Time | Temporary | Total FTE |
|---|---|---|---|---|
| 1987 | 5 | 4 | 2 | 8.59 |
| 1986 | 5 | 4 | 4 | 9.38 |
| 1985 | 5 | 4 | 4 | 9.02 |
| 1984 | 5 | 4 | 1 | 8.15 |
| 1983 | 5 | 4 | - | 7.65 |

2. Youth Programs

No YCC enrollees were allocated to the Lake Andes Complex in 1987.

4. Volunteer Program

Twelve members of the Sierra Club assisted Refuge personnel with the planting of 500 cottonwood seedlings on accretion land along the North Unit. A total of 96 hours was volunteered for the project.

The Sierra Club plants "trees for eagles" as their way of showing support for the refuge.

87 NR 2
4-25-87 BTS

## 5. Funding

Funding for the Karl E. Mundt National Wildlife Refuge is consolidated within a single annual appropriation directed for it, the Lake Andes National Wildlife Refuge, and the 20 county Lake Andes Wetland Management District (Table 2).

Table 2. Annual appropriations and manpower levels since 1983, Lake Andes National Wildlife Refuge Complex.

| Fiscal Year | O&M Budget | BLHP Budget | Large ARMM's Project | Manpower S/D |
|---|---|---|---|---|
| 1987 | 301,000 | -- | 27,000 | 2,260 |
| 1986 | 278,000 | -- | 63,000 | 2,343 |
| 1985 | 330,000 | -- | 41,000 | 2,221 |
| 1984 | 230,000 | -- | 66,000 | 2,120 |
| 1983 | 227,000 | 45,000 | -- | 1,990 |

## 6. Safety

Safety meetings were held jointly with the Charles Mix County SCS personnel on a monthly basis. Some of the subjects included pesticide poisoning, treatment of accident victims, boating safety, correct use of fire fighting equipment, and defensive driving.

Manager Wilson demonstrates correct and safe operation of our new 200 gallon pumper unit to SCS and FWS personnel.

87 NR 3
4-27-87 BTS

All personnel needing training in defensive driving attended a training course held in Wagner on June 25-26.

On July 13-14, Berle Meyers, from Sand Lake NWR, certified equipment operators on those pieces of equipment operated by the various employees.

## F. HABITAT MANAGEMENT

### 1. General

The main emphasis of the habitat management program on the Mundt Refuge is to perpetuate the riparian woodlands along the Missouri River. These woodlands provide important roosting sites for the wintering flock of endangered bald eagles. Native grass uplands are maintained as nesting cover for migratory and resident birds through programmed grazing, haying, and burning treatments. Food plots are established to provide feed for the resident wildlife and migratory waterfowl that winter along the Missouri River.

An eagle's view of the riparian habitat being protected for wintering bald eagles. (Looking south over the Jonas easement and South property).
87 NR 4
8-27-87 BTS

2. Wetlands

There are no natural wetlands occurring on the Mundt NWR of any notable size or permanence. Two wildlife ponds have been constructed on the South property. One remained full all year, but the lower pond was nearly entirely drained when the dam washed out after a water seep developed. A contractor will be hired in 1988 to repair the damages.

Several small wildlife ponds have been constructed on the North property. One receives overflow from the domestic artesian well, and it, plus the spillway overflow stream, remains ice free throughout the winter and receives extensive use by waterfowl and resident wildlife.

3. Forests

A streambank stabilization project completed in 1984 has eliminated the loss of eagle roost trees to erosion from the Missouri River. Some trees are still lost each year to beaver activities. The most damage seems to be occurring to trees along the riverbank of the South property. Eight beaver were removed from the refuge in 1986 by Special Use Permit, but damage continued in 1987. One problem with beaver control is access to the problem area. The permittee must either travel by boat on the river, or on a fair weather trail across private land. Also, beaver continue to repopulate the area from populations adjacent to the refuge. Annual beaver control will be used to keep the loss as low as possible.

Beaver continue to damage eagle roosting trees along the Missouri River in spite of control efforts.

87 NR 5
7-87 BTS

On April 25, 1987, 12 members of the Sierra Club donated their time to help plant 500 cottonwood seedlings on acretion land along the North Unit.

4. Croplands

The South property consists entirely of riparian habitat and native grasslands. Normal crop rotation on the North property has included milo, sorghum, oats/sweet clover, and oats/alfalfa. Corn had been left out of the rotation in recent years because heavy deer use during the growing stage had prevented ear formation. In 1987, corn was successfully planted in an 11 acre field on the western side of the property. Another addition to the farming rotation in 1987 was soybeans. The primary objective of planting beans was to build nitrogen in the soil, but because of heavy use by both waterfowl and resident wildlife, both corn and beans will be added to the cropping rotation again in 1988.

All farming activities on the Mundt are done by refuge personnel because in the past cooperative farmers have been unable to make it profitable. Wildlife use of the growing plants has been extensive resulting in lower yields. Table 3 summarizes the 1987 refuge farming program.

Table 3. Farming program, Karl E. Mundt NWR, 1987.

| Field | Crop | Acres |
|---|---|---|
| FA-N | Corn | 11 |
| FA-S | Soybeans | 5 |
| F2-N 1/2 | Oats/sweet clover | 7 |
| F2-S 1/2 | Milo | 9 |
| F4-W 1/2 | Oats/sweet clover | 10 |
| F4-E 1/2 | Milo | 10 |
| F8 | Milo | 1 |
| F9 | Milo | 1 |
| F10-N | Milo | 9 |
| F10-S | Oats/alfalfa | 5 |
| FG-1 | Soybeans | 3 |
| Total | | 71 |

The refuge cooperator baled 12 bales of unharvested oats for winter wildlife food. They were placed in high use areas for supplemental winter feed for turkey, pheasants and deer.

Unharvested oats were baled for use as supplemental winter feed for resident wildlife.

87 NR 6
8-5-87 BTS

5. Grasslands

The native grass evaluation plot developed cooperatively by the Soil Conservation Service and the refuge in 1983 continues to produce useful data and good wildlife cover. A total of 33 warm season varieties of native grasses were seeded by the SCS on land provided by the refuge. Data as to winter hardiness, forage production, stand vigor, and growth are taken periodically. Not only has this information been useful to the refuge in determining the best varieties for seeding, but the dense grass stands receive extensive use by the refuge pheasant population.

Data obtained from the native grass evaluation plot has been useful to the refuge, the Soil Conservation Service, and many private landowners in the area.

87 NR 7
9-12-87 BTS

Red cedar and sumac have become an increasing problem on the South Unit in recent years. Although both species provide wildlife food and cover, they have become so thick in places they are choking out other woody species and shading understory grasses to the point they have become monotypic and lost many of their wildlife benefits. In 1987, several areas of the thickest sumac were mowed by refuge personnel, and 340 Red Cedars were cut by the cooperator as part of his Special Use Permit.

A 2+ acre plot of switchgrass was harvested by cooperator for seed. Total yield was 535 pounds of seed after cleaning. At a value of $9.00 per pound if we purchased it, it was not bad for a days work.

Swathed switchgrass ready for combining. Total yield-535 pounds cleaned from a little over 2 acres.
87 NR 8
9-15-87 BTS

7. Grazing

A 55 acre unit (Unit G-5I) in the South property was grazed from April 15 to June 1. It was grazed at the rate of 1 AUM/acre, primarily for the reduction of mulch. The South property has been divided into 3 units, with each receiving 2 years rest, followed by a short-term spring graze.

Cattle grazing is an important management tool on the Mundt NWR because the rough terrain makes other types of grassland manipulation, such as haying and controlled burning impractical.
87 NR 9
6-1-87 BTS

Also, a total of 72 acres (Units G-1 and G-3) was grazed in the North property from April 1 to May 1 with a total of 54 AUM's/acre. This is roughly 1 AUM/acre of grassland after the riparian habitat is discounted. The primary objective was to stimulate growth of a warm season native seeding in Unit G-1 that had been dominated by annual weeds, and the reduction of mulch in Unit G-3. Even though moisture received during and after the grazing periods was less than normal, response to the grazing treatments was excellent.

Dung Beetles "on the job". Overall grassland conditions on the Mundt NWR appears to be good to excellent, as evidenced by the rapid recycling of nutrients.

87 NR 10
6-1-87 BTS

Current plans call for a 1988 visit by Steve Berlinger, the Regional Staff Specialist on Agricultural Practices, to discuss the proper direction to go for a more Holistic approach to grassland management on the Mundt NWR. The objective is to further improve grassland conditions while providing even greater wildlife benefits.

8. Haying

Fourteen acres of a brome/alfalfa planting and 26 acres of tall wheatgrass were hayed by cooperator on the North property for the reduction of mulch and weeds, primarily musk thistle. Haying was delayed until ground nesting was complete.

Periodic haying stimulates vigor and growth in the tame grasslands, while reducing mulch and weeds.

87 NR 11
7-15-87 BTS

9. Fire Management

No wildfires occurred on the Karl E. Mundt NWR during 1987. Fire protection comes from the volunteer fire department at Pickstown (4 miles away) and a 200 gallon slip-in pumper unit purchased in 1985. This unit is kept on the Mundt Refuge during the fire season.

The only prescribed fire conducted on the refuge in 1987 was that of the 4 acre native grass demonstration plot on April 17.

The 4 acre native grass demonstration plot was burned at the request of SCS so old litter would not "contaminate" their information on forage availability.

87 NR 12
4-17-87 BTS

10. Pest Control

South Dakota law requires land owners to control noxious weeds on their property. The most prevalent noxious weed on the Mundt is the musk thistle. Spot spraying with 2,4-D is the major method of control. Mowing is used after the plants have matured to prevent seed scattering. Musk thistle beetles, which burrow into the seed heads and eat the seeds, have been introduced on the refuge in the past, and have helped to reduce the thistle patches, especially in areas inaccessible to sprayers.

Wild marijuana grows along the Missouri River bottomland, on both private and public land. Its spread was controlled with 2,4-D in 1987.

## G. WILDLIFE

### 1. Wildlife Diversity

With the establishment of the main stem reservoirs on the Missouri River within South Dakota, a great deal of riparian woodlands were lost. The Karl E. Mundt NWR preserves a remnant of that woodland habitat. Species uncommon in other areas of the state use the Missouri River and the Mundt Refuge as migration corridors when crossing South Dakota. Because of the diversity of habitats available on the Mundt including grasslands, riparian woodlands, wetlands, and agricultural lands, the wildlife species using the area also have a wide diversity.

### 2. Endangered and Threatened Species

Bald eagles wait below Fort Randall Dam for fish smorgasbord.

87 NR 13
12-87 BTS

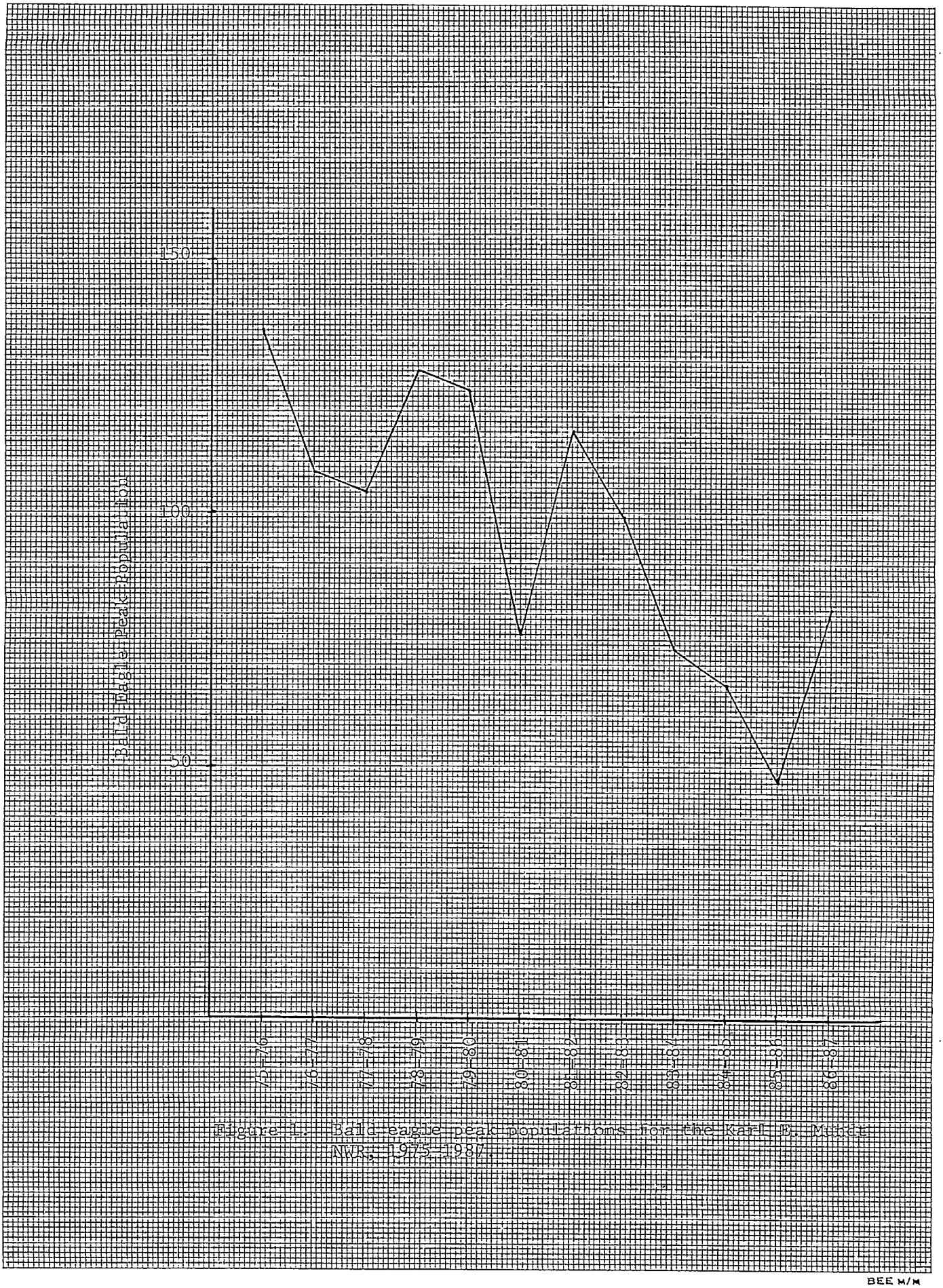



Figure 1. Bald eagle peak population for the Karl E. Mundt NWR, 1975-1987.

BEE M/M

Bald eagle populations fell from a winter peak of 81 in December, 1986 to 10 by the end of January, 1987. The first bald eagle sighting of the 1987 fall migration was on September 3 on the South Unit. By years end, a high of only 36 eagles had been observed. Although there have been upward fluctuations, the general downward trend of peak eagle numbers seems to be continuing in the winter of 1987-88. It has been felt that the fluctuations have been a reflection of winter conditions and perhaps variances in migration patterns, not declines in the population.

3. Waterfowl

Waterfowl use the open water areas below Fort Randall Dam during the cold winter months. During the mild winter of 1986-87, few waterfowl were observed using the river, probably because they were dispersed on scattered areas of open water existing on several lakes and wetlands in the area. In December of 1987, 500 Canada geese and 3,500 mallards were using the Missouri River along the refuge shoreline. The ducks were also making use of the refuge pond which is fed by artesian water and feeding on refuge fields at years end.

Waterfowl use the open water below Fort Randall Dam . . .

87 NR 14
12-87 BTS

. . .and congregate along the refuge boundary during the winter months.

87 NR 15
12-87 BTS

Waterfowl production on the Mundt NWR is low, probably because of a lack of ideal pairing and brood habitat. A few blue-winged teal use the refuge stock ponds, and 10-12 wood duck broods are raised in tree cavities along the Missouri River.

4. Marsh and Water Birds

Water fluctuations caused by discharges through Fort Randall Dam create sandy beach areas along the Missouri River adjacent to the refuge. Great blue herons and black-crowned night herons use these areas, and double-crested cormorants feed on fish stunned by passage through the dam's power tunnels.

5. Shorebirds, Gulls, Terns and Allied Species

The sandbars along the Missouri River attract large concentrations of Franklin's, herring, and ring-billed gulls. Smelt and other small fish stunned by the dam's power tunnels are their main diet. Shorebird species commonly observed along the sandbars are killdeer and greater yellowlegs, with an occasional common snipe and woodcock.

6. Raptors

The diverse habitats on the Mundt Refuge attract a variety of raptor species. Northern harriers, American kestrels, and an occasional prairie falcon hunt the upper grasslands, while Cooper's and sharp-shinned hawks are commonly seen in the timbered areas. Great horned owls and screech owls were observed in 1987, and up to 45 turkey vultures were seen perching in the trees along the rivers edge of the South Unit during the summer. As many as 20 turkey vultures on the North Unit were observed at the dinner table partaking in the gourmet meal provided by a minor deer die-off (Sec. G-8).

During a deer die-off on the Mundt NWR, turkey vultures used the mature cottonwoods as an observation post to decide which "steak" looked the tenderist.

87 NR 16
8-27-87 BTS

Other raptors observed during the year included red-tailed hawks, sharp-shinned hawks, rough-legged hawks, ferruginous, and Swainson's hawks.

8. Game Mammals

White-tail deer are the most abundant big game animal on the Mundt NWR. Year round use averages 50-100 deer, but during the winter months the population often builds to 250-300 deer. They are attracted by the available food supply on the refuge, as well as the thick timber along the Missouri River.

White-tail deer enjoy the diversity of food and habitat offered on the Mundt NWR.

87 NR 17
12-87 BTS

During the mild winter of 1986-87, the population did not exceed 150 deer. The lack of snow cover kept more off refuge food available to them than normal. In July and August of 1987, approximately 25 white-tail deer died on and adjacent to the refuge, apparently from EHD (Epizootic Hemorrhagic Disease). An unusually high number of dead deer were found in other areas of the state, and EHD was confirmed in several of those found close to the refuge. The symptoms were consistent with EHD, that being apparently healthy deer dying rapidly, signs of internal hemorrhaging, and often close to water. At the time of the die-off, the deer population was within the carrying capacity of the refuge, and it did not seem to be a factor in the deaths.

One of the potential trophies that fell victim to EHD on the refuge.

87 NR 18
8-26-87 BTS

Although the deer herd is presently healthy, there is always concern about high populations on the refuge, and the increased potential for death due to disease, starvation, or storm. Because hunting in the refuge would directly conflict with the wintering bald eagles, deer reduction must take place on private property. One proposal that is being discussed for the 1988 season is a special hunt which would involve newly licensed youths on their first hunt. Refuge neighbor Jim Kirwan has suggested the idea of using his property as an area available for young people who have passed the Hunter Safety Course to come with their fathers and take their first deer under quality conditions, hoping they will develope into good sportsmen. The FWS has expressed an eagerness to cooperate in this venture.

10. Other Resident Wildlife

The refuge ring-necked pheasant population benefited from an extremely mild winter and favorable spring nesting conditions. Population estimates at years end was approximately 500 pheasants using the North Unit, compared to 250 at the same time last year. Hunting success on Corps land adjacent to the refuge also showed a notable improvement.

The bobwhite quail population also showed an increase. Several coveys and at least two broods of young were observed on the refuge.

Around 80 wild turkey, both Rio Grande and Merriam's, were using the refuge at years end. An estimated 300 turkey are observed regularly on private land between the two refuge units.

Diverse habitat and food supplies on the Mundt NWR provide year round security for wild turkeys.
87 NR 19
12-87 BTS

## H. PUBLIC USE

### 1. General

The Karl E. Mundt NWR is closed to the public to minimize human disturbance in the wintering bald eagle roost area. Excellent opportunities exist to observe and photograph eagles during their feeding activities on Corps of Engineers' land adjacent to the refuge.

### 8. Hunting

No hunting is allowed on the Karl E. Mundt NWR because of the conflict with wintering bald eagles. Very little waterfowl hunting occurs adjacent to the refuge. The Missouri River between the Fort Randall Dam and the Nebraska stateline is a waterline waterfowl refuge. In 1984, the State Waterfowl

Refuge status was extended to cover the cottonwood timber along the Corps' property. Limited upland decoy hunting of Canada geese occurs on private property adjacent to the refuge.

9. Fishing

No fishing is allowed on the riverbank adjacent to the refuge. Fishermen often troll adjacent to the shoreline in search of walleye and northern pike, but the fishing pressure is generally light during the time the eagles are using the refuge, and no problems have developed.

11. Wildlife Observation

Many inquiries are received each year about the wintering bald eagles, and opportunities for observing and photographing them. The Mundt Refuge is closed to the public, so people are usually directed to good viewing areas on Corp of Engineers land directly below the Fort Randall Dam.

17. Law Enforcement

There is occasional heavy recreational activity on that portion of the Missouri River bordering the refuge to the east, and the Corps of Engineers campground to the north. While occasional trespass occurs, no significant problems have developed because most of this use occurs during summer months when the eagles are not using the refuge.

The large refuge deer herd attracts hunters from all over the State, even though the refuge is closed to hunting. Many hunters wait for an unsuspecting deer to cross the refuge fence onto adjacent Corps land to the north, or elect to hunt on adjacent private land for a "fee". In 1987, the State set a split deer season in Gregory County, with a total of 1,200 licenses issued. This greatly relieved deer hunting pressure around the refuge, as compared to the 1986 single season with 1,800 permits, because it put less people in the field at one time and reduced the competition. The result was a greater quality hunt for the sportsman, and far less people wandering around with no place to hunt and trying to figure out if they could sneak into the refuge without getting caught. No citations were issued, and no problems are known to have occurred.

# I. EQUIPMENT AND FACILITIES

## 2. Rehabilitation

A portion of the roof on the government quarters was reshingled after several reoccurring leaks ruined portions of the kitchen ceiling.

Mundt quarters - new shingles fixed a leak that only bothered when it rained.

87 NR 20
6-23-87 BTS

## 3. Major Maintenance

After five years of trying, we were finally successful in getting rural water connected to the Mundt quarters. The previous water supply came from an artesian well that, after running through numerous filters and purifiers, provided only two gallons of potable water per day.

Rural water was connected to the Mundt quarters to replace an inadequate artesian well system.

87 NR 21
9-10-87 BW

## J. OTHER ITEMS

### 4. Credits

This report was written by Bruce Schoonover with editing and typing done by Pam Nagel. Photos are appropriately credited.

# LAKE ANDES WETLAND MANAGEMENT DISTRICT

Lake Andes, South Dakota

## ANNUAL NARRATIVE REPORT

Calendar Year 1987

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

LAKE ANDES WETLAND MANAGEMENT DISTRICT

LAKE ANDES, SOUTH DAKOTA

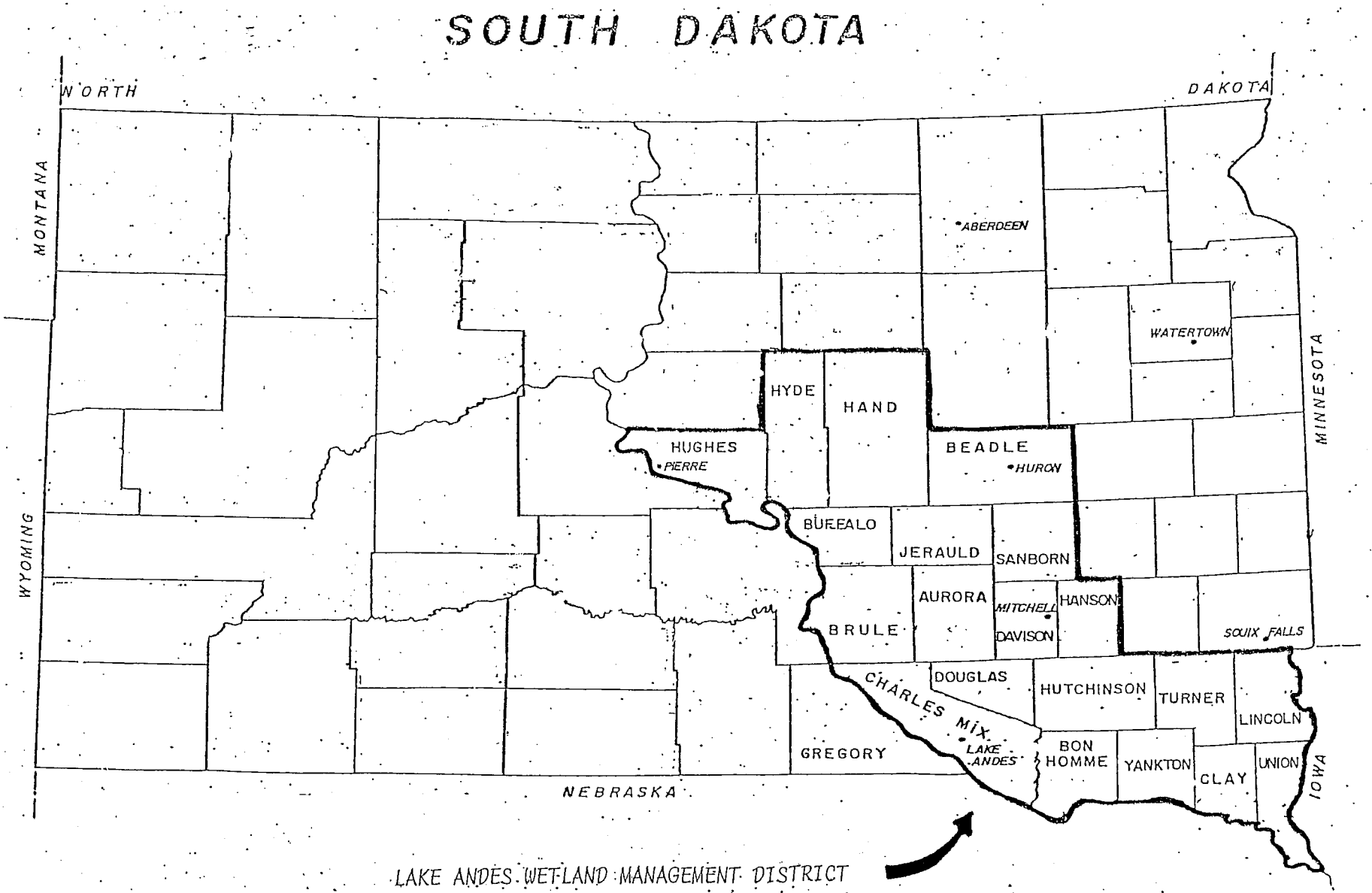
ANNUAL NARRATIVE REPORT

Calendar Year 1987

| | | | |
|---|---|---|---|
| _____ | _____ | _____ | _____ |
| Refuge Manager | Date | Refuge Supervisor Review | Date |

_____ _____

Regional Office Approval Date


SOUTH DAKOTA
NORTH
DAKOTA
MONTANA
WYOMING
MINNESOTA
NEBRASKA
IOWA
ABERDEEN
WATERTOWN
HYDE
HAND
HUGHES
PIERRE
BEADLE
HURON
BUFFALO
JERAULD
SANBORN
AURORA
MITCHELL
HANSON
DAVISON
BRULE
SOUIX FALLS
DOUGLAS
HUTCHINSON
TURNER
LINCOLN
CHARLES MIX
LAKE ANDES
GREGORY
BON HOMME
YANKTON
CLAY
UNION
LAKE ANDES WETLAND MANAGEMENT DISTRICT

# INTRODUCTION

The Lake Andes WMD is located in the extreme southwestern portion of the Prairie Pothole Region. The southern location results in the area having milder winters than the remainder of the eastern Dakotas and Minnesota, however, summers are longer and warmer. Annual evaporation amounts to 36 inches, while the rainfall varies from 17 inches to 24 inches across the district. These conditions result in more years of marginal and poor wetland conditions in comparison to areas found further north and eastward.

Three vegetative zones are found across the district. The true or tall grass prairie zone, encompasses the four eastern counties, with the dominant native grasses being big bluestem, Indian grass, switchgrass, and other warm-season grasses. Very little native prairie remains in this area since it contains highly fertile soils and adequate rainfall conducive to maximized agri-business. Land use is extremely heavy and most private wetlands have been drained. Due to the lack of suitable habitat, wildlife populations are generally low throughout this zone. Only six WPA's are located within this zone.

The tall grass/mixed prairie transition zone covers the central portion of the district. The dominant native grasses in this area are western wheatgrass, big bluestem, and porcupine grass. Fluctuating annual precipitation limits, to some extent, maximize agri-business, therefore, land use is more diversified between small grains, row crops, hayland, and pasture. Shelterbelts, farmsteads, and feedlot areas are also more common. Wetland and associated vegetative cover on private lands support excellent populations of wildlife. The vast majority of the district's WPA's are located within this zone. Waterfowl and other wildlife populations are highest within this zone as compared to other zones.

The western portion of the district falls within the mixed grass prairie zone, with dominant native grasses being western wheatgrass, needle and thread, and blue grama. Annual rainfall averages 17 inches, therefore, small grain crops are predominant on agricultural lands. Native prairie, pastures, and hayland comprise a larger percentage of the land use than in the two zones to the east. Even though land use is less intense, the wetlands are less numerous and upland vegetation is shorter due to the drier climate. Wildlife populations reach good numbers in scattered areas, but overall this area is less productive than the transition zone. Only five WPA's are located within this zone.

INTRODUCTION

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## J. OTHER ITEMS

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K. FEEDBACK . . . . Nothing To Report

L. INFORMATION PACKET - - - (inside back cover)

## A. HIGHLIGHTS

New WPA purchases total 2199.04 acres (Section C.1).

The refuge staff examined over 80 tracts of FmHA inventory lands for deed restrictions (Section C.3).

Heavy March rains created excellent wetland conditions over all of the district, but made rural travel a challenge on the southern part of the district (Section B.).

The management program on the district's grasslands was stepped up as a total of 3078 acres were either hayed, grazed or burned (Section F.).

A total of 35 easement violations were confirmed by ground checks with 19 ground checks still remaining (Section F.13).

The number of waterfowl pairs surveyed during the quarter section survey was the highest ever recorded since that survey technique was initiated (Section G.3).

Revenue sharing checks totaling $33,016.00 were delivered to 18 counties in the district (Section J.3).

## B. CLIMATIC CONDITIONS

The winter of 1986-87 was like no other in the recent memory of local residents. Both man and wildlife enjoyed one of the warmest South Dakota winters on record. No snowfall was recorded during the month of January and only 2.5 inches fell during the February-April period. The lack of a snow cover made temperatures in the fifties common. Not the typical South Dakota winter! Average snowfall for the January-April period for Pickstown is nearly 16 inches.

Statewide, February's recorded weather data was the second warmest, second driest, and second lowest snowfall since 1931. A local farmer was even seen disking on February 2.

As expected, wintering populations of wildlife came through the winter in excellent shape. The stage was set for one of the best ringneck pheasant nesting seasons in years.

During the last week in March heavy rains totaling 7.7 inches fell during a one week period that produced heavy runoff. Wetlands over much of southeast South Dakota already had excellent water levels. Once the water stopped running nearly all wetlands were brim full. Many roads in the southern half of the district were blocked by high water. Suddenly it

became a challenge just to visit WPAs in Douglas, Charles Mix and Aurora Counties.

Conditions changed during April-June from very wet to very dry. Only 3.38 inches of precipitation fell during this period. Normal rainfall is 9.06 inches. Row crops that were not planted early in the season germinated poorly.

Fall weather was beautiful. One shot of 4.13 inches of rain fell in September, but there was no runoff because of extremely dry soil conditions. Farmers had excellent fall harvest conditions and most crops were out by mid November. Farmers had ample opportunity to do fall tillage until 8 inches of snow fell on 12/23 and halted field work for the winter.

1987 Climatic conditions recorded at Pickstown, SD.

| | Snowfall | Total Precipitation | Temperatures (F.) High | Low |
|---|---|---|---|---|
| January | ---- | 0.05 | 66 | -4 |
| February | 2.5 | 1.08 | 70 | 16 |
| March | ---- | 7.70 | 81 | 11 |
| April | ---- | 0.87 | 88 | 23 |
| May | ---- | 1.25 | 91 | 39 |
| June | ---- | 1.26 | 98 | 49 |
| July | ---- | 4.26 | 102 | 50 |
| August | ---- | 2.16 | 99 | 41 |
| September | ---- | 4.13 | 91 | 42 |
| October | ---- | 0.37 | 85 | 20 |
| November | ---- | 1.16 | 67 | 20 |
| December | 8.0 | 1.17 | 66 | -7 |
| Totals | 10.5 | 25.46 | | |
| Normals | 25.2 | 21.37 | | |

## C. LAND ACQUISITION

### 1. Fee Title

The land acquisition program for the Lake Andes District is summarized in Table 1.

Table 1. Fee acquisition, Lake Andes WMD, 1987

| Tract Name | County | Total Acres | Wetland Acres |
|---|---|---|---|
| Fed. Land Bank(Roundout) | Beadle | 160.00 | 62.00 |
| Schulte (Roundout) | Charles Mix | 60.00 | 18.00 |
| Jones | Charles Mix | 85.00 | 13.00 |
| Varilek | Charles Mix | 320.00 | 87.00 |
| Tucek | Charles Mix | 108.04 | 37.00 |
| Hyde | Hughes | 320.00 | 210.00 |
| Roth | Hutchinson | 102.00 | 53.00 |
| Grosz (Roundout) | Hutchinson | 4.00 | |
| Uttecht (Roundout) | Hutchinson | 80.00 | 36.00 |
| Mayer | Hutchinson | 160.00 | 50.00 |
| Jost (Roundout) | Jerauld | 80.00 | 12.00 |
| Radke (Roundout) | Jerauld | 80.00 | 10.00 |
| Jackson | Jerauld | 640.00 | 123.00 |
| Total | | 2199.04 | 711.00 |

Fee title holdings for the Lake Andes Wetland Management District are described in Table 2.

Table 2. Fee title holdings, Lake Andes WMD.

| County | # Mgmt. Units | Acres |
|---|---|---|
| Aurora | 16 | 4,720.38 |
| Beadle | 17 | 3,710.61 |
| Bon Homme | 4 | 641.49 |
| Brule | 3 | 1,073.55 |
| Buffalo | 0 | --- |
| Charles Mix | 15 | 3,846.20 |
| Clay | 1 | 40.00 |
| Davison | 4 | 224.52 |
| Douglas | 14 | 3,995.28 |
| Hand | 14 | 2,797.32 |
| Hanson | 6 | 836.13 |
| Hughes | 2 | 455.99 |
| Hutchinson | 5 | 613.06 |
| Hyde | 0 | --- |
| Jerauld | 8 | 1,470.40 |
| Lincoln | 2 | 177.22 |
| Sanborn | 2 | 93.00 |
| Turner | 2 | 298.30 |
| Union | 1 | 96.02 |
| Yankton | 1 | 21.60 |
| Totals | 117 | 25,111.07 |

2. Easements

A total of 511 wetland acres within the district were protected by perpetual easements with the landowner during 1987. By years end, a total of 86,422 wetland acres were protected by perpetual easement in the 20 county Lake Andes WMD.

Table 3. Easement acquisition through 1987, Lake Andes WMD.

| County | Number Of Easement Contracts | Easement Wetland Acres |
|---|---|---|
| Aurora | 222 | 9,709 |
| Beadle | 283 | 15,343 |
| Bon Homme | 9 | 205 |
| Brule | 140 | 9,714 |
| Buffalo | 6 | 837 |
| Charles Mix | 112 | 4,423 |
| Clay | 1 | 7 |
| Davison | 7 | 162 |
| Douglas | 86 | 2,904 |
| Hand | 253 | 15,633 |
| Hanson | 75 | 2,383 |
| Hughes | 4 | 257 |
| Hutchinson | 32 | 1,045 |
| Hyde | 110 | 9,718 |
| Jerauld | 99 | 4,040 |
| Lincoln | 3 | 114 |
| Sanborn | 182 | 9,601 |
| Turner | 7 | 204 |
| Union | 0 | -- |
| Yankton | 5 | 123 |
| Total | 1636 | 86,422 |

3. Other

Over 80 tracts of land currently under FmHA (Farmers Home Administration) ownership were examined to determine the presence of wetlands to be protected by deed restriction before resale to the private sector. Drained wetlands on these tracts were also identified and will be restored by the FWS. The deed restrictions will protect wetlands in much the same way as the current perpetual easement program and will be monitored for compliance by the FWS in the same manner.

Being a new program, there remains many glitches to be worked out, but in the end wetlands will be preserved with no direct land costs. High indirect costs in terms of time and manpower have been incurred to this point in the process.

## D. PLANNING

### 4. Compliance With Environmental And Cultural Resource Mandates

A Special Use Permit was issued to the Charles Mix County Highway Department for grading and reshaping the gravel road bordering the Sherman WPA. An archaeological survey was conducted at the county's expense on that portion of the WPA impacted by the project on July 21, 1987. No cultural resources were located in the project area and clearance for the project was granted.

The Douglas County Highway Department requested a right-of-way permit to widen county road #19 from 66 feet to 100 feet by the Korevaar and Huizenga WPAs and 8 Douglas County wetland easements. The project was reviewed by the State Historic Preservation Officer. He determined the project will have no effect on archaeological or historical properties. The six mile project would fill 7.4 acres of wetlands. The project is scheduled for 1988 and 1989. Wetland losses will be mitigated with a no net loss of in-kind habitat value.

### 5. Research and Investigation

#### Lake Andes NR85 - Owens Bay Waterfowl Nesting Study

This study, started in 1985, was to determine the density, nesting success, and habitat preferences of upland nesting waterfowl on the Owens Bay Unit when nest predators were controlled. Trout Waterfowl Production Area was included in the study as a comparison area, but without predator control. It has similar habitat types.

Waterfowl nests were located using a cable-chain drag pulled by two four-wheel drive vehicles driving parallel through the cover. Two nest drags were completed, one starting on May 14 and another on June 8, 1987. Cover types searched on Owens Bay included 149 acres of native grass, 71 acres of brome/sweet clover DNC, and 40 acres tall wheatgrass/sweet clover DNC. On Trout WPA, 111 acres of native grass and 22 acres of brome/sweet clover DNC were nest searched. Twelve raccoons and 2 skunks were removed on the Owens Bay predator control unit prior to and during the nesting season.

A total of 181 nests were located on Owens Bay and 80 on Trout WPA. The most common nesting species was blue-winged teal comprising 58.2% of the nests (152). The remaining nests located were mallard (48), gadwall (47), shoveler (6), pintail (5), green-winged teal (2) and

wigeon (1). For all species, nesting success was 48.0% Mayfield on Owens Bay versus 10.0% Mayfield on Trout WPA. This compares to 1986's finding of 44.8% and 22.1% respectively and 48.4% and 18.8% in 1985.

Nest densities for all species were the highest in brome/sweet clover DNC (1 per 0.94 acres) compared to native grass (1 per 1.46 acres). Blue-winged teal, mallard, and gadwall nest densities were the highest in DNC. Nest densities for these species were slightly lower in native grass. Similar preferences were found in 1986.

The total estimated costs to control predators on Owens Bay was $591.25.

## E. ADMINISTRATION

### 1. Personnel

Lake Andes NWR staff (L. to R.) Back Row: 8, 7, 5, 1, 3, 4, Front Row: 2, 11, 6, 9, 10

87 NR 1

8-10-87 BTS

#### Permanent

1. Bill Wilson, GS 12 . . . . . Refuge Manager
2. Bruce T. Schoonover, GS 11 . . . . . Refuge Manager
3. John Jave III, GS 9. . . . . Refuge Manager
4. Ejner Frandsen, WG 8 . . . . . Maintenance Worker
5. Pam Nagel, GS 6 . . . . . Refuge Assistant (Typing)

#### Career Seasonal

6. John L. Eldridge, WG 3 . . . . . Laborer
7. John Fuchs, Jr., WG 3. . . . . Laborer
8. Leon E. Kirchhevel, WG 3 . . . . . Laborer
9. Eugene J. Slaba, WG 3. . . . . Laborer

#### Summer Temporary

10. Steve Krentz, GS 3 (5/10 - 08/28). . . . Biological Aid
11. Richard Rolston, GS 3 (5/10 - 11/21) . . Biological Aid

Table 4. Lake Andes Complex staffing pattern, 1983-87

| Year | Permanent Full Time | Permanent Part Time | Temporary | Total FTE |
|---|---|---|---|---|
| 1987 | 5 | 4 | 2 | 8.59 |
| 1986 | 5 | 4 | 4 | 9.38 |
| 1985 | 5 | 4 | 4 | 9.02 |
| 1984 | 5 | 4 | 1 | 8.15 |
| 1983 | 5 | 4 | - | 7.65 |

2. Youth Programs

The Lake Andes NWR Complex did not host a YCC program in 1987 because of YCC budget constraints.

4. Volunteer Program

A total of 30 volunteers worked 204 hours for the Lake Andes Complex. Habitat maintenance was the primary service. Most of our volunteers are farmers who keep the roadsides mowed on township roads which border WPAs.

5. Funding

The Lake Andes National Wildlife Refuge also administers the 20 county Lake Andes Wetland Management District and the Karl E. Mundt National Wildlife Refuge. Funding for both refuges and the district is consolidated within a single annual appropriation (Table 5).

Table 5. Annual appropriations and manpower levels since 1983, Lake Andes National Wildlife Refuge Complex.

| Fiscal Year | O&M Budget | BLHP Budget | Large ARMM's Project | Manpower S/D |
|---|---|---|---|---|
| 1987 | 301,000 | -- | 27,000 | 2,260 |
| 1986 | 278,000 | -- | 63,000 | 2,343 |
| 1985 | 330,000 | -- | 41,000 | 2,221 |
| 1984 | 230,000 | -- | 66,000 | 2,120 |
| 1983 | 227,000 | 45,000 | -- | 1,990 |

6. Safety

Monthly safety meetings were held in conjunction with personnel from the local Soil Conservation Service office. Some of the subjects included pesticide poisoning, treatment of accident victims, boating safety, the correct use of fire fighting equipment and defensive driving.

Refuge personnel attended a defensive driving course at the Public Health Hospital in Wagner, SD on June 25-26. Personnel that needed training from the Madison WMD also attended.

Members of the refuge staff were certified on various pieces of equipment by Berle Meyers from Sand Lake NWR on July 13-14.

One lost time incident occurred in 1987. Biological Aid Steve Krentz was lost from work for a total of 60 hours. He had contracted a case of tularemia. At first it was thought that he had a case of pesticide poisoning. On July 17, 1987, Steve had been spraying weeds on various WPA's in the district with 2,4-D ester. On this particular day the temperature was in the high 90's and his pickup began over-heating. He turned off the air conditioner and opened the window. This apparently allowed vapors to enter the cab of his truck.

Monday morning, July 20, Steve called in and said he was not feeling well and would not be in for that day. He visited a physician on Monday afternoon. The doctor did not give a positive diagnosis, but indicated it could be a toxic reaction to the chemical. Steve missed a half day on Tuesday and visited the doctor again on Wednesday, July 22. A chest X-ray was taken on that visit and a small spot was found on his left lung that was thought to be a result of pesticide fumes. The doctor indicated it would take two or three days to clear up and he would be fine.

Steve returned to work, but continued to feel poorly into the month of August. He still continued to experience occasional flu-like symptoms.

In August, Manager Wilson attended a disease workshop taught by Dr. Locke and Dr. Windingsted in conjunction with the Project Leaders meeting at Quivira NWR, KS. He noted in the discussion about the disease tularemia, that many of the symptoms in humans were similar to those that Steve was experiencing. Steve was then asked to be tested for tularemia. It turned out positive. It was not pesticide poisoning. Lake Andes Refuge had experienced a summer die-off of cottontail rabbits and the disease was diagnosed as tularemia. The disease can be contracted by humans from rabbits, contaminated water, or fleas and ticks in the area. Steve probably contracted the disease while working on the refuge waterfowl nest drag study.

A lesson to be learned from this is that employees with unusual health problems should make doctors aware of their profession and any possible contacts with diseased wildlife.

The safety aspects of our pesticide spraying program was examined much closer after the Steve Krentz incident. Several new pieces of equipment including disposable coveralls, latex gloves, rubber boots and respirators were purchased for the program. In addition the last purchase of 2,4-D was in 2.5 gallon containers instead of 30 gallon drums. This should eliminate some of the steps in handling and reduce spills.

7. Technical Assistance

Assistant Refuge Manager Schoonover met with ASCS in Canton, SD about a drainage commencement determination in Lincoln County on November 9, 1987. The land owner's case was based on the evidence that he had started work on the drainage before the December 23, 1985 date outlined in the Farm Bill and was seeking full benefits. Schoonover agreed with the land owner.

Refuge Manager Wilson met with the SCS on November 25, to examine the proposed drainage of a type III wetland in Yankton County to make a minimal effect determination. The FWS did not agree that drainage of the wetland would have a minimal effect on the biological environment of the area.

Assistant Refuge Manager Jave accompanied Nel McPhillips of the Pierre ES Office on an inspection of a Corps of Engineers project proposal to straighten the mouth of Randall Creek below Ft. Randall Dam. The area is used by wintering bald eagles. It was determined the project would have little effect on the eagles habitat, but would help solve erosion problems in the Corps campground.

Technical assistance was given to the ES office in Albuquerque, NM in December concerning management of an eagle refuge being set up on one of the Navajo Reservations.

## F. HABITAT MANAGEMENT

1. General

The management practices we use on waterfowl production areas are slowly changing at this station as new ideas and philosophies are implemented. With increasing demands on time, labor, and budgets and additional new units to manage, it is getting more difficult to do a good job. Gone now are the force account food plots that were planted for resident wildlife. We have found that tame DNC cannot just be planted

and left without management as was done in the past. We are experimenting with short duration crowd grazing on native grasslands. And new ideas for re-establishing native grasses are being experimented with.

2. Wetlands

Wetland conditions over the entire WMD were excellent in 1987. Wetland basins in the southern part of the district were estimated at nearly 100% full in 1987. This is compared to 95% full in 1986 and 79% in 1985. We have had a trend of above normal precipitation since 1984.

Wetlands on the souther part of the district were brim full in 1987.

87 NR 2
4-30-87 BTS

As part of Ducks Unlimited's U.S. Habitat Program, a wetland development project was completed on the Broken Arrow WPA during the fall of 1986. A low head dam was constructed forming a 56.4 surface acre impoundment. Additional work included diverting water from the Mud Lake drain to form another 25 acres of wetlands. Large amounts of runoff in late March-early April filled all impoundments. The DU impoundment was held two feet below maximum pool level to allow the new structures and shoreline to vegetate.

A DU wetland development project on Broken Arrow WPA added over 80 acres of wetlands to the unit.

87 NR 3
4-30-87 BTS

Several small ditch plugs were constructed to create additional wetland habitat on WPAs in 1987. WPAs that had small projects included Plooster, Boggs, Miller, and Broken Arrow.

In recent years the impoundments on Broken Arrow WPA have been infested with carp and as a result, use by waterfowl has been declining. In 1987, impoundments #2 and #6 were drawn down in September and left dry to winterkill. They will be filled in 1988. Dam #6 had developed a leak during the spring runoff period. The outlet pipe and water control structure were lowered in the dike and the dike repaired.

Broken Arrow impoundment #6 was drained down to winterkill the carp population.

87 NR 4
11-10-87 BTS

4. Croplands

Previous to 1987 this station planted small force account food plots on selected WPA's to provide a winter food source for resident wildlife. In 1987, this practice was stopped. It was taking too much staff time with less than desirable results. It was taking too much travel time between units and many times plantings were late and the crops did not mature. Emphasis is now on permittee food plots where a suitable land base exists.

Food plots farmed by permittees are planted on some WPAs where a suitable land base exists.

87 NR 5
10-7-87 BTS

Table 6. Food plots on the Lake Andes WMD in 1987.

| WPA | Crop | Acres | Government Share |
|---|---|---|---|
| Broken Arrow | Milo | 30 | 25% |
| Huber | Corn | 34 | 33% |
| Bauer | Oats/sweet clover | 22 | 0% |
| Huizenga | Corn | 10 | Cash Rent |
| Voght | Oats | 30 | Cash Rent* |
| Huber | Oats | 10 | 0* |
| Miller | Barley | 6 | Cash Rent* |

*Cooperator planted small grain nurse crops for DNC or native grass seeding.

Huizenga WPA was cash rented and will be again in 1988 in preparation for future native grass seeding. Ten acres of oats was also planted on the Huber WPA. The cooperator received 100% of the crop in exchange for seeding the field to DNC.

5. Grasslands

The Lake Andes District manages approximately 7,000 acres of native prairie/native grass seedings and nearly 4,000 acres of tame grass/DNC throughout the 20 county area. Because of the large size of the district, three distinct prairie communities are covered. These communities, east to west, include tall grass or true prairie, mixed grass/tall grass transition, and mixed prairie. The district grassland management program includes properly timed burning, haying, and grazing treatments, coupled with periods of rest to try to achieve the desired range conditions.

As new units are added to the district, former croplands on these areas are seeded to nesting cover. Table 7 summarizes the native grass seedings for 1987. All seedings were accomplished with force account labor.

Table 7. Native grass seedings, Lake Andes WMD, 1987

| WPA | Acres | Seeding Date |
|---|---|---|
| Miller | 6 | 05/87 |
| Voght | 30 | 05/87 |
| Voght* | 25 | 06/01/87 |

*This 25 acre tract was seeded into corn stubble following an application of Roundup to kill the existing vegetation.

Seventeen acres of cropped area on the Dvorak tract on the Raysby WPA were seeded to tall wheat grass. This area is considered an excellent wintering area for pheasants. Ten acres of DNC were planted on the Huber WPA.

Native grass seedings on the Dvorak tract and Miller and Voght WPAs were mowed to control weeds and reduce competition to the new seedlings during the summer.

Five acres of invading Chinese elms were mowed on the Humphrey WPA in October as a control measure.

7. Grazing

Twenty three units received grazing treatments (Table 8) in 1987. The 1987 grazing rate was $7.20/AUM which was down from the $8.70/AUM rate charged in 1986. Discounts were made for crowd grazing and fencing. Stocking rates were reduced on certain units because of the extremely high water conditions.

Table 8. 1987 grazing program, Lake Andes WMD

| WPA | Acres | AUM'S | Dates |
|---|---|---|---|
| Sherman | 24 | 17 | 04/09-06/01 |
| Koupal | 50 | 50 | 04/09-06/01 |
| Reinhardt | 132 | 132 | 04/09-06/01 |
| Campbell | 147 | 147 | 04/09-06/01 |
| Welker | 87 | 85 | 04/10-06/01 |
| Green | 42 | 30 | 04/10-06/01 |
| Denning | 89 | 65 | 04/16-06/01 |
| Schute | 60 | 45 | 04/16-06/01 |
| LeClaire | 100 | 90 | 04/16-06/01 |
| Van Zee | 44 | 40 | 04/16-06/01 |
| Soulek | 32 | 25 | 04/16-06/01 |
| Spring Lake | 90 | 90 | 04/16-06/01 |
| New Holland | 45 | 45 | 04/16-06/01 |
| Stanley (S) | 57 | 50 | 04/16-06/01 |
| Johnson | 8 | 8 | 05/01-06/01 |
| Maine | 145 | 75 | 04/20-06/01 |
| Coler | 75 | 50 | 04/22-06/01 |
| Foster | 60 | 46 | 04/22-06/01 |
| Millerdale | 60 | 45 | 07/01-08/15 |
| Broken Arrow | 417 | 240 | Rotation |
| DeCook | 37 | 22 | 05/01-06/01 |
| Buchholz | 5 | 5 | 06/02-07/01 |
| Humphrey | 95 | 95 | 07/20-08/20 |
| Total | 1901 | 1497 | |

Grazing on the Lake Andes WMD is used to reduce invader species and break up dense mulch in native grass units. Brome and Kentucky bluegrass are the primary invaders. These species flatten with winter snows and produce a dense mulch layer that suppresses vegetative growth. The grazing treatments consist of heavy stocking rates during the critical growing season of the invader species (generally May 1 - June 1). The invaders are stressed during their growth period which results in less competition with the later maturing native grass species. This practice has the drawback of also suppressing cool-season natives.

Spring crowd grazing is used to manage most native grass stands in the district.

87 NR 6
5-13-87 BTS

Warm season grass species showed an excellent response by October.

87 NR 7
10-7-87 BTS

In 1987, permittees were allowed to turn into units in mid-April. It gave livestock extra time to clean up the heavy mulch layer found on most grasslands after a period of rest. A rigid May 1-June 1 schedule had been followed in the past.

8. Haying

Periodic haying is used to reduce restrictive mulch accumulation or where weeds (primarily thistles) are a problem in grassland stands. Shallow disking by permittees is often used on DNC fields to break up the root bound, stagnate seedings as well as to invigorate the legume species in the stand. Haying rates for 1987 ranged from exchanging hay for a shallow disking on areas with poor quality hay to rates up to $7.50/acre. As in 1986, the low demand for hay held rates low.

Table 9. Haying program, Lake Andes WMD, 1987.

| WPA | Vegetation Type | Acres |
|---|---|---|
| Boggs* | DNC | 60 |
| Hohn* | DNC | 27 |
| Buss | DNC | 22 |
| Shull | Natives | 50 |
| Scott* | DNC | 30 |
| Kafka | Alfalfa | 35 |
| Broken Arrow | DNC | 42 |
| Lutz | DNC | 45 |
| Foster* | DNC | 63 |
| Sherman | DNC | 24 |
| Plooster | DNC | 30 |
| LeClaire | DNC | 45 |
| Voght | DNC | 23 |
| Huber | Alfalfa | 35 |
| Humphrey | DNC | 95 |
| Bauer | DNC | 127 |
| Fisher | Natives | 9 |
| Zink | DNC | 30 |
| DeVelder* | DNC | 100 |
| Koss | DNC | 86 |
| DeLange | DNC/Natives | 13 |
| Kafka (2nd cutting) | Alfalfa | 35 |
| Total | | 1026 |

*Shallow disked by permittee after hay removal.

Alfalfa field on the Kafka WPA was hayed to control thistles.

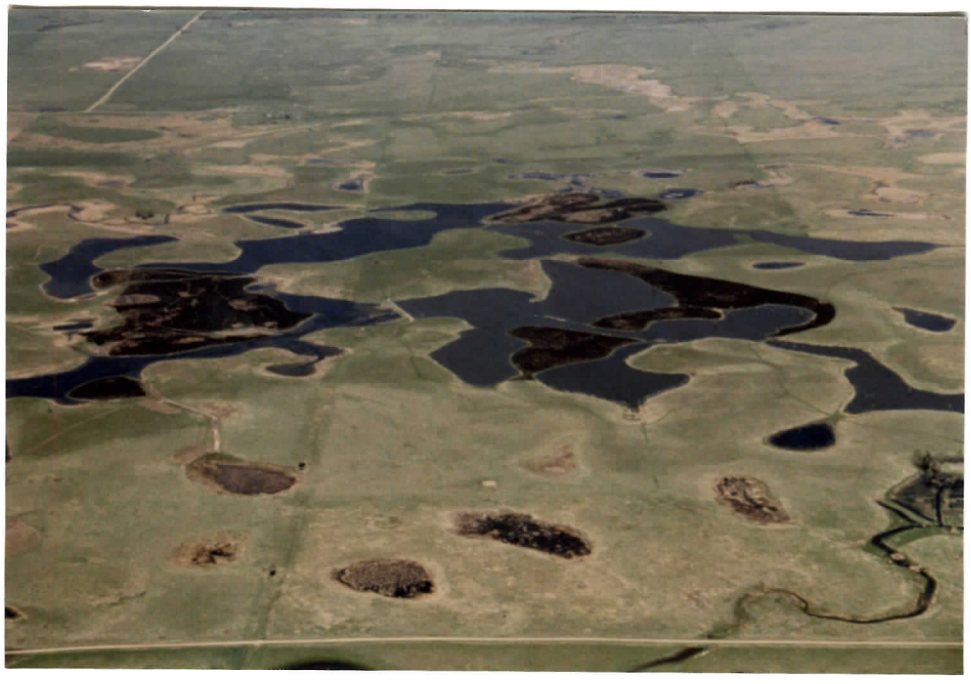
87 NR 8
9-17-87 BTS

9. Fire Management

Prescribed burns were completed on 2 units totaling 94 acres in April. All were islands or peninsulas where a fire line could easily be controlled by 2-3 staff members. An excellent response by warm seasons resulted on Cosby WPA and in the swale areas of the Broken Arrow WPA. We were also surprised to see a carpet of blue grama respond on Broken Arrow where very little previously existed. The DNC prescribed burn was to remove a heavy mulch buildup. While this objective was reached, little response could be noted.

This 25 acre peninsula on the Cosby WPA was burned in late April.

87 NR 9
4-30-87 BTS



Several peninsulas on the Broken Arrow WPA that had not been grazed for years were prescribe burned to reduce mulch.

87 NR 10
4-30-87 BTS

Fifty-seven acres of native prairie was burned on Humphrey WPA on September 14, to see what the response would be. This particular unit had not had a management treatment for 10 years. As a result, an extremely heavy Kentucky bluegrass mulch had accumulated. This unit had a very low plant density. A backing fire did a good job of removing the mulch. The cool seasons species made some growth by the first frost, but the timing of the burn was a little too late for much response. This unit will be grazed during the spring of 1988 to stress the Kentucky bluegrass.

No known wildfires occurred on the Lake Andes WMD in 1987.

Table 10. Prescribed burns, Lake Andes WMD, 1987

| WPA | Acres | Grassland Type | Date |
|---|---|---|---|
| Broken Arrow | 51 | Natives | 04/22 |
| Broken Arrow | 18 | Brome DNC | 04/23 |
| Cosby | 25 | Natives | 04/24 |
| Humphrey | 57 | Natives | 09/14 |

These islands on the Humphrey WPA were prescribe burned on September 14 because . . .

87 NR 11
10-7-87 BTS

. . . an extremely heavy Kentucky bluegrass mulch had suppressed most native species.

87 NR 12
9-14-87 BTS

A backing fire did a good job of removing the mulch layer.

87 NR 13
9-14-87 BTS

10. Pest Control

According to South Dakota State law, landowners must control noxious weeds on their property. Because of this law and for good public relations, the Lake Andes WMD participates in a weed control program on its WPA's. Emphasis is placed on the control of Canada thistle, musk thistle and wormwood sage. Field bindweed and leafy spurge cause problems to a lesser extent.

The wet cycle we have been experiencing has contributed to an explosion of musk thistles over the southern portion of the district. The counties of Charles Mix, Douglas, and Aurora have the worst infestations. While State and Federal agencies usually get the blame, many, many private landowners fail to control their thistle problems. Everybody has had a problem treating areas the last few years because of the boggy conditions. We annually receive several weed complaints and try to reach these units at the first opportunity.

In 1987, an estimated 800 staff hours and 450 gallons of spray (2,4-D) were used during noxious weed control on 73 units. This is up from 320 staff hours in 1986. Reasons for the increase include spraying 19 more units and the ordering and set up of a new spray rig. An estimated $16,194 was spent on weed control efforts. The total includes $2,730 spent on new equipment.

The Coler WPA (north) was aerial sprayed with 2,4-D for thistles in June. The cost was $5.00 per acre and totaled $230.00.

A new approach (actually old) to weed control was tried in Douglas County. The county was contracted by the refuge to chop musk thistles on problem WPAs. The county used a crew of 8 high school students whom they paid $4.00 per hour. Our total bill was $628.00 and we got a lot of chemical-free control. Seed heads were collected from the thistles, placed in plastic bags and disposed of in a land fill.

Table 11. Noxious weed control program, Lake Andes WMD, 1987

| County | # Units in County | Acres Sprayed |
|---|---|---|
| Aurora | 11 | 217 |
| Beadle | 15 | 184 |
| Bon Homme | 4 | 80 |
| Brule | 2 | 40 |
| Charles Mix | 10 | 255 |
| Clay | 1 | 15 |
| Davison | 3 | 20 |
| Douglas | 10 | 330 |
| Hand | 4 | 30 |
| Hanson | 5 | 105 |
| Hutchinson | 2 | 14 |
| Jerauld | 2 | 36 |
| Lincoln | 1 | 25 |
| Turner | 1 | 15 |
| Union | 1 | 30 |
| Yankton | 1 | 5 |
| Total | 73 | 1401 |

Canada thistles on the Lutz WPA in Aurora County.

87 NR 14
7-23-87 BTS

13. WPA Easement Monitoring

Since the early 1960's, perpetual easements have been purchased from landowners on a willing seller basis to protect wetlands in private ownership. The only restrictions the easement places on the land are that wetlands can not be drained, burned, or filled. In other words, when they are dry of natural causes, they belong to the farmer, when they are wet, they belong to the ducks.

The monitoring of wetland easements to insure compliance is one of our highest priority jobs. It is also one of the most time consuming and expensive jobs. Violations are usually detected with an aerial flight in the fall of the year. A second, low level flight is then conducted to further confirm a violation and get additional photo documentation. Each suspected violation is ground checked to gather evidence with measurements and pictures. Usually in February and March, landowner contacts are made to establish a compliance date for restoration of the wetlands. Then in the spring, all violations have to be reinspected to insure compliance has been met. If the landowner refuses to restore the wetlands, court action is initiated. In the fall, surveillance flights are again made, and the process repeats itself.

All but one of the 27 easement violations detected in the fall of 1986 were satisfactorily resolved in 1987. Ditch filling to restore protected wetlands in Yankton 10X was only marginal and will require further work. This is scheduled to be done in the spring of 1988.

Fall surveillance flights in 1987 revealed a lot of ditching activity in the District and more easement violations than expected. By the time snow ended ground checking of possible problems in December, 35 violations had been confirmed and 19 possible violations remained to be ground checked in the spring of 1988 after snow melt. At least 2 of the violations are second time violations with the same landowners, and will require $100 citations be issued. Several others appear to involve the original easement seller, and could potentially involve court action.

Hutchinson 39X. Ditches dug with earth moving scrapers . . .

87 NR 15
11-18-87 BTS

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Hutchinson 39X. . . . are often deep and permanent, . . .

87 NR 16
12-7-87 BTS

Aurora 47X2. . . .but other equipment is also used. . .

87 NR 17
12-4-87 BTS

Aurora 47X2. . . .to dig ditches that destroy protected wetlands.

87 NR 18
12-4-87 BTS

## G. WILDLIFE

### 1. Wildlife Diversity

The districts management objectives are aimed at providing optimum waterfowl production habitat and to protect natural prairie wetlands. Upland habitat is managed through a program of controlled burning, grazing, haying and rest to provide optimum diversity of plants and animals indigenous to the prairie pothole region.

### 2. Endangered and Threatened Species

Endangered bald eagles are a common winter resident along the Missouri River which flows along the western boundary of the district. In late winter the eagles generally disperse from areas of concentration along the river to forage. An occasional bird is sighted on the district during this time of the year.

Peregrine falcons may be found on the district during their seasonal migrations. None were sighted this year.

### 3. Waterfowl

Unusually mild temperatures in February ushered in an early spring migration for waterfowl. On February 13, Canada geese, mallards, and northern pintails had been sighted within the district.

Spring migrants found excellent wetland conditions over the entire WMD. Wetland basins sampled during the quarter section count were estimated to be close to 100% full compared to 95% in 1986.

The quarter section sampling technique was used in determining the total number of breeding pairs on the WMD. The total breeding pair estimate for 1987 was 14,427 pairs; a 28.3% increase over 1986. This is the highest number of pairs ever recorded on a survey. Many of the WPAs in the southern part of the district looked like open-water lakes. This year most birds were found in newly flooded habitat. The biggest improvement in water conditions was on the northern portion of the district and these areas saw the largest increase in breeding pairs. An examination of Table 12 shows how the breeding population on the district has increased beginning with drought conditions in 1981. We have been experiencing a wet cycle that began in 1982. Estimates for easement lands are not made.

Table 12. Quarter section waterfowl breeding pair surveys, Lake Andes WMD, 1981-87.

| Year | % Wet | Indicated Pairs | Mean Breeding Population Estimate |
|---|---|---|---|
| 1987 | 100 | 1,430 | 14,427 |
| 1986 | 95 | 1,121 | 11,243 |
| 1985 | 79 | 1,389 | 13,683 |
| 1984 | 85 | 787 | 7,803 |
| 1983 | 68.6 | 538 | 6,473 |
| 1982 | 60.3 | 237 | 3,404 |
| 1981 | 0.0* | -- | -- |

*No survey was conducted due to drought conditions

High soil moisture conditions over the district resulted in grassland habitats being in excellent condition. The 1987 quarter section survey sampled 858.3 wetland acres. Production estimates are based on a 45% hen success and an average duckling production of 5.

Table 13. Estimated waterfowl production, by species, on the Lake Andes WMD, 1987.

| Species | Estimated Pairs | Estimated Production | % of Pop. | % Change From 1986 |
|---|---|---|---|---|
| Blue-winged teal | 7,919 | 17,818 | 55.0 | +17 |
| Mallard | 1,594 | 3,587 | 11.0 | +49 |
| Gadwall | 1,453 | 3,269 | 10.0 | +96 |
| Northern Pintail | 999 | 2,248 | 7.0 | +51 |
| Shoveler | 837 | 1,883 | 6.0 | -18 |
| Ruddy Duck | 656 | 1,476 | 4.5 | +98 |
| Redhead | 545 | 1,226 | 3.8 | +10 |
| Scaup | 161 | 362 | 1.1 | |
| Green-winged teal | 111 | 250 | 0.8 | |
| Wigeon | 81 | 182 | 0.6 | |
| Ringneck | 71 | 160 | | |
| Canvasback | NONE SURVEYED | | | |
| Totals | 14,427 | 32,461 | | |

Waterfowl production was good over the southern part of the district because of excellent water conditions.

87 NR 19 JJ

The fall waterfowl migration peaked during the week of October 18. An estimated peak population of 65,000 waterfowl used the district wetlands in October. Many WPAs remained ice free up to mid-November and held good mallard populations.

4. Marsh and Water Birds

The most common marsh and water birds on the district are great blue herons, green-backed herons, black crowned night herons, great egrets, American bitterns, coots, soras and double crested cormorants.

Cattle egrets continue to expand their range northward over the district.

87 NR 20
8-4-87 BTS

A rare sighting of a white-faced ibis was made in Douglas County on July 31.

87 NR 21 JJ

5. Shorebirds, Gulls, Terns, and Allied Species

Shorebird species recorded on the WMD during 1987 included willets, greater and lesser yellowlegs, avocets, Wilson's phalarope, marbled godwits, common snipe and long-billed dowitchers. Upland sandpipers were common on the larger grassland units. District wetlands receded all through the summer and shorebird species were especially numerous on the exposed mudflats.

6. Raptors

During 1987, raptor sightings on the WMD included red-tailed hawks, northern harriers, ferruginous hawks, rough-legged hawks, Swainson's hawks, and American kestrels. Golden eagles are occasional winter visitors over the WMD. Great horned owls, screech owls, Cooper's hawks, and sharp-shinned hawks are commonly found in shelterbelts.

This northern harrier nest was found on the Marshall WPA in Beadle County.

87 NR 22
5-11-87 BTS

7. Other Migratory Birds

Two mourning dove coo counts were conducted on the WMD in cooperation with the office of Migratory Bird Management. Established routes were ran near Stickney and Platte, SD on May 29 and June 1, respectively. A total of 118 doves were heard for a total of 573 calls. This compares with 119 doves and 604 calls in 1986.

8. Game Mammals

The most abundant big game animal over the district is the white-tail deer. Mule deer are common along the Missouri River breaks and are occasionally observed on WPAs along the western edge of the district. White-tail deer numbers over the district have stabilized. The upward population trend experienced through the eighties leveled off in 1985 when a record number of tags were issued by the Game, Fish and Parks Department. The present population seems to be a fair compromise between being tolerable to landowners and still providing excellent hunting opportunities for the sportsman.

A small herd of pronghorn antelope resides in Hughes County and occasionally wander on to the Robbins WPA.

10. Other Resident Wildlife

The ring-necked pheasant is the most popular of the resident game species over the district. Pheasant numbers over much of South Dakota rebounded in 1987 from their low 1986 levels. Low mortality resulting from a virtually snowless, mild winter let an excellent breeding population go into the spring nesting season. Conditions for nesting and chick survival couldn't have been better. Nesting got underway early because of the warm spring. Very little rainfall occurred during the critical May-early June period when the broods are most susceptible to such. Brood counts conducted by the SD Game, Fish and Parks Department indicated a 25% increase over 1986 on some survey routes.

Sharptailed grouse and prairie chickens are common along the western border of the district. Millerdale, Campbell, and Broken Arrow WPAs receive the most use.

Muskrat populations over the district have been increasing in relation to the current wet cycle. Many WPAs are open water lakes and support populations of bank rats. Little emergent vegetation is available for houses or to support a large population. Formerly semi-dry wetlands which are normally cattail choked now have good water and support the highest rat populations.

Many wetlands had excellent muskrat populations in 1987.

87 NR 23
12-3-87 BTS

17. Disease Prevention and Control

There were no known waterfowl die-offs on the district's WPA's during 1987.

Epizootic hemorrhagic disease showed up in South Dakota's white-tail deer herd in 1987. Reports of dead deer came from several counties in the southern portion of the district. Our staff found only one dead deer on the district and that was on Broken Arrow WPA. Several were found on the Mundt NWR which our office administers. The outbreak was during the late summer/early fall. The virus is believed to be transmitted through insects. The animals die from extensive internal hemorrhaging. Domestic livestock are not affected.

## H. PUBLIC USE

1. General

District waterfowl production areas are open year-around to a variety of outdoor activities. Wildlife observation, hunting, photography, picnicking, and nature hikes are all available to those willing to leave their vehicles. Hunting and trapping are restricted to South Dakota seasons and bag limits. Use of

motorized vehicles, over night camping and fires are prohibited on all district WPA's. The scattered WPA's provide an opportunity for individuals to stand in waist-high native grass, overlook a cattail-lined marsh, and see the South Dakota prairie as it once was before the tractor and plow.

2. Outdoor Classrooms - Student

Since the Lake Andes WMD is administered within the Lake Andes National Wildlife Refuge Complex, most talks and demonstrations deal with the entire complex. Table 14 summarizes the I&R program within the complex.

Table 14. Lake Andes NWR Complex I & R Programs given during 1987.

| Date | Program | Attendance |
|---|---|---|
| 03/27 | Jave had a booth at the Marty Science Fair about wildlife. | 150 |
| 05/18 | Schoonover presented a program about the refuge to the Wagner Elementary School, Third Grades. | 60 |
| 05/26 | Jave presented a program about birds to Armour Elementary School, First Grade. | 15 |
| 05/26 | Jave gave a program about the refuge to the Ravinia Cub Scouts. | 7 |
| 06/15 | Jave gave a program about the refuge to Lake Andes Cub Scouts. | 7 |
| 07/13 | Jave gave a program to the Wagner Girl Scouts about the refuge. | 12 |
| 07/15 | Schoonover gave a program to the Wagner Rotary Club about lead poisoning and steel shot: | 35 |
| 10/26 | Schoonover presented a program to the White Lake Sportsmans Club about WPA management. | 30 |
| 11/02 | Jave presented a program to the Lake Andes Boy Scouts about waterfowl. | 12 |

6. Interpretive Exhibits/Demonstrations

The Lake Andes Refuge headquarters serves as the primary contact station for the WMD. Mounted specimens, interpretive displays, and a system 70 display are housed in the headquarters basement. Because of the high water conditions on Lake Andes, water inundated the basement for much of the year resulting in its closure to the public.

In 1987, the refuge manned a booth with display at the Charles Mix County Fair in Lake Andes on January 20 and 21. The Mid-Winter Fair is an excellent time to touch base with local residents about FWS policies.

8. Hunting

Ring-necked pheasant hunters had one of their best seasons in years. Conditions were ideal for the season opening on October 17. Pheasant numbers were higher than they have been for several years. Aided by a beautiful fall, farmers had many of their crop fields harvested by opening day. Large numbers of nonresident hunters annually descend on South Dakota for the much publicized pheasant season. This year they weren't disappointed and excellent hunting could be found on the waterfowl production areas.

Pheasant hunters may occasionally find prairie chickens on WPA's in the western portion of the district.

87 NR 24 JJ

Waterfowl hunters had another good year in 1987 as potholes and marshes throughout the district held excellent water. Gadwalls, widgeon and mallards comprised most of the early season bag. Many of the WPA's did not hold as many ducks as normal because of the high water conditions and lack of vegetative cover. Wetlands that were normally shallow and cattail choked (mostly on private land) held most of the ducks. Aided by a mild fall, waterfowlers enjoyed good late season mallard shooting on marshes with cattail cover until late November.

Deer hunting success over the district averaged 65% in 1987. White-tail deer populations have stabilized over much of South Dakota. The SD Game, Fish and Parks Department was successful in controlling the deer herd expansion in 1985 and 1986 by increasing the number of deer tags.

10. Trapping

Waterfowl production areas are open to public trapping subject to state law. Trapping pressure was quite high on WPA's in 1987. The muskrat population has been increasing over the southern part of the district because of the wet cycle. Trappers were quick to take advantage of the fair pelt price (top of $3.50 for rats).

17. Law Enforcement

Because of the size of the Lake Andes WMD, 20 counties covering all of southeastern South Dakota, law enforcement is a "chance deal" at best. We are very fortunate to have highly qualified and dedicated State Conservation Officers assigned to all counties of the district. Much of the law enforcement activities are done in coordination with these State officials. They often advise us of potential problems on our areas that they feel we might not be aware of, and we do the same for them.

Managers Schoonover and Jave attended the 40 hour law enforcement refresher course in Grand Island, NE on March 16-20, 1987. Wilson, Schoonover and Jave also attended a law enforcement coordination meeting and qualified with their firearms in Sioux Falls on September 16-17, 1987.

A case of farmer trespass was discovered in August on the Korevaar WPA. As it turned out the neighboring landowner had failed to leave access to one of his small grain fields. Instead of driving through his maturing cornfield he elected to cut our fence and make an access road through 40 rods of native grass seeding. The neighbor agreed to repair the fence and was not issued an FOC.

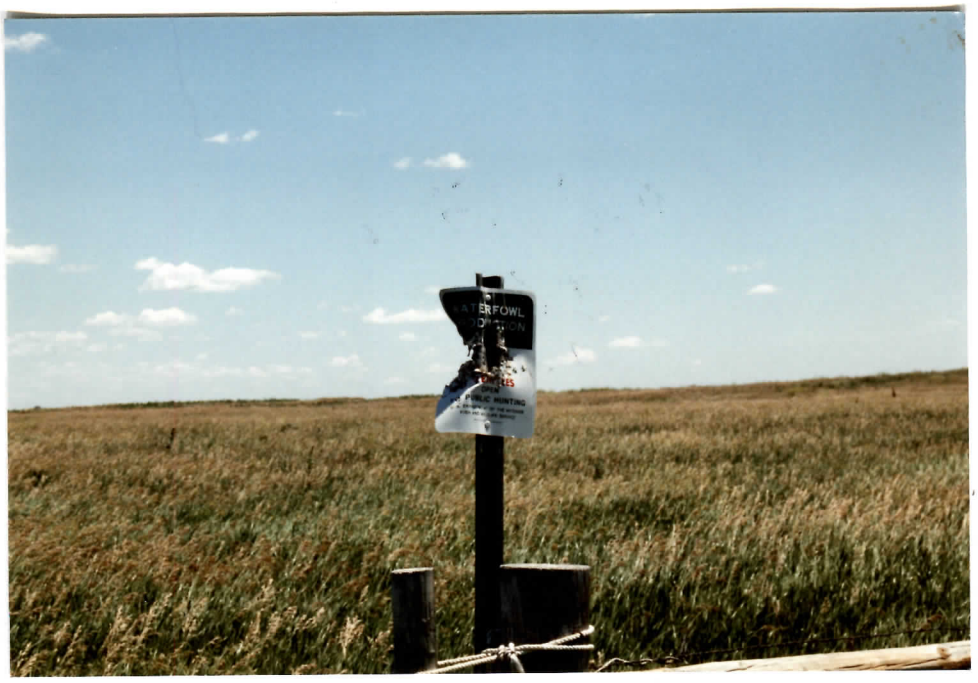
A
Former trespass on the Korevaar WPA in Douglas County.

87 NR 25 JJ

During an August inspection of Shoemaker WPA in Beadle County it was discovered that rocks had been dumped over the fence on to the WPA by a neighbor. The adjacent landowner was contacted concerning the violation and said his tenant was probably responsible. He agreed to have the rocks removed.

Rock dumping by the neighboring land owner on Shoemaker WPA in Beadle County.

87 NR 26 BTS



The destruction of WPA boundary signs by plinkers is a never ending problem.

87 NR 27
6-26-87 BTS

## I. EQUIPMENT AND FACILITIES

### 1. New Construction

Several new units have been acquired on the district during the last few years. Several fencing projects have been completed and many other fences repaired. Table 15 summarizes the fencing and posting program for the year. All fences were of 3-strand barbed wire construction to control livestock.

Table 15. Fencing and posting program, Lake Andes WMD 1987.

| WPA | Fence Type | No. Of Rods |
|---|---|---|
| Nielson | Boundary | 640 |
| DeCook (Groenweg Tract) | Boundary | 320 |
| DeCook (Isackson Tract) | Boundary | 480 |
| Raysby (Dvorak Tract) | Boundary | 200 |

Field access approaches with culverts were constructed on the Denning and Ziebart WPA's.

2. Rehabilitation

Impoundment #6 on the Broken Arrow WPA was drawn down in August to eliminate carp. The dams control structure had been set at too high an elevation to completely drain the unit. The structure and outlet pipe were removed, the unit completely drained and the structure was replaced at a lower elevation. This impoundment restores 30 acres of previously drained marshes.

3. Major Maintenance

Because of the large size of the Lake Andes WMD, over 176 miles one way to the most distant unit, the district has been broken up into three maintenance zones. One zone is taken each year and all fences, signs, walk throughs, gates, etc. are checked on WPAs within that zone. During 1987, maintenance was completed for the southeast zone. This assures that the facilities on each WPA are maintained on a routine basis.

8. Other

A set of farm buildings on the Varilek WPA was excessed and sold by bid. Buildings sold included a 40' x 50' quonset machine shed, house, 38' x 60' pole machine shed, 19' x 32' pole shed and two 2,000 bushel grain bins. A total of $4,240.00 was received for the buildings. The buildings were to be removed in 120 days.

A farm site containing several old buildings and junk piles was cleaned up on the DeCook WPA (Isackson Tract).

87 NR 28
9-2-87 BTS

## J. OTHER ITEMS

### 3. Items of Interest

Revenue sharing checks totaling $33,016.00 were delivered to 18 counties within the wetland management district. Two counties have no fee title lands (only easements) and therefore received no payments.

### 4. Credits

Nagel wrote Sections C.1, E.1, E.5, typed and assembled the report. Wilson wrote Section C.2, C.3. Schoonover wrote Section F.13. Jave wrote the remainder of the document.